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J. J. Meagher.

THE
ELEMENTS
OF
COMMERCE;
OR,
A TREATISE
ON
DIFFERENT CALCULATIONS,......OPERATIONS OF EXCHANGE,
ARBITRATIONS OF EXCHANGE,
SPECULATIONS IN EXCHANGE AND BANKING OPERATIONS,
EXCHANGE CIRCULATIONS.

OPERATIONS OF SPECIE AND BULLION,
PARS OF EXCHANGE AND OF COINS,.....PRACTICAL SPECULATIONS
IN MERCHANDIZE,
DESCRIPTION OF MONIES, WEIGHTS, AND MEASURES,
TABLES OF MONIES, WEIGHTS, AND MEASURES,
TABLES OF LOGARITHMS.

BEING
A COMPLETE SYSTEM
OF
COMMERCIAL CALCULATIONS.

BY CHRISTOPHER DUBOST,
Formerly Engineer, and Author of 'Commercial Arithmetic,' &c.

IN TWO VOLUMES.

VOL. II.

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OF

OPERATIONS

OF

SPECIE AND BULLION.

HAVING conſidered, in the preceding volume, the operations of exchange under their ſeveral points of view, and examined their various degrees of utility in buſineſs, I think it now expedient to treat of the operations of gold and ſilver in ſpecie and in bullion.

Such operations are intimately connected with thoſe in exchange, one of their principal objects being that of diſcovering the price of exchange which may be eſtabliſhed between two contracting places, in conſequence of the purchaſe of a certain quantity of ſpecie or bullion in one of thoſe places, and of the ſale of the ſame quantity in the other.

I ſhall confine myſelf, however, to treating of ſuch operations only as reſult from the commerce of precious metals carried on by England with France, Hamburgh, Holland, Portugal, and Spain; but the rules and examples which I ſhall furniſh, the expoſition of the differences of ſtandard and conditions of ſale, as well as the relation of weights, which will be found either in this part of my work, or in a ſubſequent part relating to monies, weights, and meaſures, generally, will afford the means of reſolving any ſort of calculation which may not have been foreſeen.

Before I enter upon the ſubject, I ſhall conſider the nature and properties of the two metals which are the baſis of this commerce, and alſo advert to the two other metals which are uſed in the alloy, or adulteration, of the former.

OF CERTAIN METALS.

GOLD.

Among the inherent qualities of this metal, one of the moſt remarkable is that of greater indeſtructibility, and therefore perfection, than is poſſeſſed by any other. It is unalterable by air or water, and is not ſubject to ruſt. When it is in its greateſt purity, it is not ſonorous, has very little elaſticity, and is exceedingly ſoft and flexible, and more ductile than any other ſubſtance hitherto enumerated in metallurgy. It melts at 32° *Wedgwood,* and burns only when ſubmitted to the galvanic or electric ſpark. It may be volatilized and calcined in high and long continued heats. Gold mingles in fuſion with all metals, but, excepting copper, they debaſe its colour, which is reddiſh yellow. Its malleability is alſo impaired by all the other metals, but in a leſs degree by copper and by ſilver than by others. The diviſibility of gold is prodigious. If a pound of ſilver be melted with a ſingle grain of gold, the gold will be equally diffuſed through the whole ſilver; ſo that, taking one grain from any part of the maſs (in which there can be no more than the 5760th part of a grain of gold), and diſſolving it in *aqua fortis,* the gold will fall to the bottom.

A grain of gold may be extended into a leaf containing 56 ſquare inches, and this leaf may be divided into 560,000 viſible parts. For an inch in length may be divided into 100 parts, every one of which will be viſible to the naked eye: conſequently, a ſquare inch may be divided into 10,000 parts, and 56 ſquare inches into 560,000. Such leaves are commonly uſed in gilding; and their tenuity is ſuch, that if 124,500 were laid upon one another, and preſſed together, they would not exceed an inch in thickneſs. The tenacity of the parts of gold is alſo very ſurpriſing; for a wire of $\frac{1}{10}$ of an inch in diameter will ſupport a weight of 500 pounds.

SILVER.

This metal, being the whiteſt, is more brilliant than any other, ſince it reflects a greater degree of light. It is ſomewhat harder, and more ſonorous than gold, fuſible with a leſs degree of heat, and its ductility is not greatly inferior. A ſingle grain has been drawn into a wire three yards long, which has been flattened into a plate an inch broad: the tenacity of its parts is nearly one half leſs than that of gold, for a ſilver wire of $\frac{1}{10}$ of an inch in diameter is unable to bear more than 270 pounds; and, in reſpect to their greateſt tenuity, the wire uſed for aſtronomical purpoſes meaſures only the 750th part of an inch in diameter.

COPPER,

When pure, is of a pale red colour, which eaſily tarniſhes in a moiſt air, and, by continued expoſure, the metal itſelf contracts a green ruſt. It is the moſt ſonorous of all the metals; and its ductility, hardneſs, and tenacity, are very conſiderable; for it may be drawn into wires as fine as hair, or beaten into leaves almoſt as thin as thoſe of ſilver; and a wire of $\frac{1}{10}$ of an inch in diameter will ſupport a weight of 299½ pounds.

PLATINA.

The name of this metal is a diminutive of *plata*, which is the Spaniſh name for ſilver, and it is ſo called in alluſion to its colour; in fact, when properly refined, its colour is ſomething between that of iron and ſilver: it is the heavieſt body hitherto known, and the hardeſt and moſt durable of all the metals. Platina is likewiſe extremely ductile, the moſt infuſible ſubſtance yet analyzed; and the tenacity of its parts is ſtronger than that of gold, whence it has been called *white gold*. It is found in the gold mines in the territory of Choco, in Peru; and, as it may be employed, by reaſon of its great ſpecific weight, in adulterating gold, the court of Spain has taken meaſures to prevent its exportation.

OF THE SPECIFIC GRAVITY OF CERTAIN METALS.

By *ſpecific gravity* is meant the weight, in water, of any ſubſtance, with reference to its bulk.

The art of weighing different bodies in water, and thereby finding their ſpecific gravities, or weights, bulk for bulk, was invented by Archimedes; of which we have the following account.

Hiero, king of Syracuſe, having applied to Archimedes to diſcover whether a crown made for the king, and aſſerted by the artiſt to be of pure gold, were not alloyed with copper, the philoſopher deduced the means, till then unknown, of aſcertaining the fact, from a caſual occurrence. For going into a bathing-tub of water, and obſerving that he thereby raiſed the water, he concluded that he had raiſed it juſt as high as would have been effected by any other ſubſtance correſponding exactly with his own bulk: and conſidering that any other body of equal weight, and of leſs bulk than himſelf, could not have raiſed the water ſo high as he did, he immediately told the king that he had found a method by which he could diſcover whether there were any cheat in the manufacture of the crown; for gold being heavier than ſilver or copper, muſt be of leſs bulk than that of the ſame weight of either of thoſe metals. He therefore deſired that a maſs of pure gold equally heavy with the crown, when weighed in the air, ſhould be weighed againſt it in water, and, if the crown were alloyed, it would not then counterpoiſe the maſs of gold. And upon making the trial, he found that the maſs of gold weighed much heavier in water than the crown; and alſo, when the maſs and the crown were immerſed ſeparately in one veſſel of water, the elevation of the water occaſioned by the crown was much greater than that occaſioned by the maſs. Thus by making trials with different metals, all equally heavy with the crown when weighed in the air, he found out the quantity of alloy in the crown.

Such is the aſſerted origin of the hydroſtatic balance, which differs very little from a common balance nicely made: it has a hook at the bottom of each ſcale, on which may be hung ſmall weights depending from horſe hairs, or from ſilken threads; ſo that, while the ſcales themſelves remain in the air, the bodies ſuſpended from them may be immerſed in water.

If a body in one of thoſe ſcales be counterpoiſed in the air by weights in the other ſcale, and if the ſame body be only ſuſpended from the hook, and immerſed into water, the equilibrium will be immediately deſtroyed. Then if, without altering thoſe weights, as much weight be put into the ſcale from which the body hangs as will reſtore the equilibrium, that weight will be equal to the weight of a quantity of water of the magnitude of the immerſed body; and if the weight of the body in the air be divided by its apparent loſs in the water, that is, by that weight which reſtores the equilibrium, the quotient will then ſhew how much that body may be heavier than its bulk of water. Hence the following principle, that the ſpecific gravity of bodies is their weight, with reference to an equal bulk of rain or diſtilled water, the latter being the ſtandard with which every other body is compared.

It is by ſuch proceſs that the ſpecific gravity of gold has been found to be to that of water as 19,3 to 1; that of ſilver as 10,51 to 1; that of copper as 8,58 to 1; and that of platina as 22,5 to 1. To conclude, the hydroſtatic balance affords a certain method of diſcovering mixtures of metals without affecting their parts; but ſuch are the care and accuracy required in the operation, that the greater number of chemiſts who have reſorted to it do not agree in their reſults, for which reaſon the hydroſtatic balance is not adopted in practice, in reſpect to the ſale of gold and ſilver.

LONDON.

The weight uſed for the appreciation of precious metals is the pound, called Troy-weight, which was introduced into England, in 1066, by William the Conqueror. It derived its origin from the pound inſtituted by Charlemagne, and its name from Troyes, a city of Champagne, where it was firſt adopted. The pound troy is divided into 12 ounces, each of 20 pennyweights, which are each divided into 24 grains. The pound is therefore compoſed of 5760 grains, and the ounce of 480 grains: by a peculiar ſubdiviſion of the latter into 20 mites, of a mite into 24 droits, of a droit into 20 periots, and, finally, of a periot into 24 blanks, it required no leſs than 230,400 blanks to compoſe a grain; but the loweſt denomination which is now practically uſed is that of the grain.

The weight agreed upon as the unit of reference of fine gold is that of 24 carats; and in order to expreſs the degrees of inferior fineneſs, the carat is itſelf divided into 4 grains, which, being of a different weight from the grains of the pound troy, are diſtinguiſhed by the appellation of carat-grains. The fractions of ſuch grains have not any particular denomination. Standard gold is that which is to fine gold as 22 are to 24; or, in other words, it is of 22 carats, or 88 carat-grains, being the degree of fineneſs which is uſed in the coinage of this metal, and which is alſo underſtood when we ſpeak of the commercial price of gold. In the maſs, therefore, weighing 24 carats, which we call a pound of ſtandard gold, there are 22 carats of fine gold, the ſupplementary quantities introduced being 1 carat of fine ſilver, and 1 carat of fine copper.

The weight agreed upon as the unit of reference of fine ſilver is that of 12 ounces, each of which is divided into 20 pennyweights, and theſe are again ſubdivided into grains of the pound troy. Standard ſilver is to fine ſilver in the proportion of 11 ounces 2 pennyweights, or $\frac{37}{40}$, being the degree of fineneſs which is referred to in the commercial price of ſilver, and uſed in the coinage of this metal. In the maſs, therefore, weighing 12 ounces, which we call a pound of ſtandard ſilver, there are 11 oz 2 dwts of fine ſilver, with addition of 18 dwts of fine copper.

In order to aſcertain the degree of fineneſs of the metals which the Bank of England purchaſes, they are aſſayed at the Mint. In this proceſs, the refiner prepares his materials by taking a few grains of the metal to be aſſayed, whether cuttings or ſcrapings; and, cleanſing them from droſs, he puts them into the cupel, or teſt, with a piece of clean lead on the fire, till it be refined to the higheſt degree. After taking the metal from the fire, the refiner lets it cool, beats it clean, and, having a pair of ſcales curiouſly glazed, he puts the refined metal into one ſcale, and a weight correſponding with the weight of the metal before the operation into the other ſcale. He then weighs the cupelled metal, computing, by the loſs of weight upon the quantity taken, the proportion of loſs which there would have been, if a pound or an ounce had been cupelled. By this means, the degree of purity of the maſs itſelf is accurately determined at the Bank, according to the written report of the aſſay-maſter, which, in reſpect to gold, is in carats, carat-grains, and the fractions thereof; and, in reſpect to ſilver, in ounces, pennyweights, and half pennyweights.

QUOTATION AT LONDON.

ſold at more or leſs.

Portugal gold in coin	£4	0	0	per ounce weight.
Foreign gold in bars .	4	0	0	per ounce ſtandard.
New doubloons	3	19	6	per ounce weight.
New dollars	0	5	3	per ounce weight.
Silver in bars	0	5	4	per ounce ſtandard.

Bullion and foreign coin of gold and ſilver may be imported duty free.

The exportation of bullion is prohibited, unleſs a certificate be produced from the court of the lord-mayor and aldermen of London to the commiſſioners for collecting his majeſty's cuſtoms, that ſuch bullion is foreign, and not molten from coins of this realm, or clippings thereof, nor from plate wrought in this kingdom.

The exportation of gold and ſilver coin is alſo prohibited, without the king's licence, except foreign coin upon entry.

OBSERVATIONS

Upon the Relation of the different Weights uſed in England, and in ſome other Countries, in reſpect to the Commerce of precious Metals.

The relation of an ounce, Engliſh troy-weight, to an ounce, *poids de marc*, of France, was determined by the celebrated Newton :: 63 : 64; that is, that 63 ounces Engliſh were equivalent to 64 ounces French. It would even appear, that the Royal Society of London and the Academy of Sciences at Paris had agreed to conſider ſuch proportion as exact, in which caſe the French ounce would be equivalent to $472\frac{1}{2}$ grains, troy-weight, as will be ſeen by the following operation;

1 ounce of France $=472\frac{1}{2}$ grs.
64 ounces of France = 63 ounces of England
1 ounce of England = 480 grains.

Upon the ground, however, of ſubſequent aſſays made by Mr. Tillet, the pound of 12 ounces Engliſh has been compared to 12 ounces 1 gros 37 grains, or 7021 grains French; whence it follows that the French ounce would be equivalent to $472\frac{13}{24}$ grains, according to the following example:

1 ounce of France=472½¾grs
1 ounce of France= 576 grains of France
7021 grains of France=5760 grains of England.

Nevertheleſs, the reſult of the commercial operations between theſe two countries has not always coincided either with the one or with the other of the above mentioned criteria of calculation; for it appears, by ſtrictures upon the accounts of the gold imported from France into England, that the proportion generally reſulting here is that of 60 to 61, while ſimilar importations into France from England determine the exiſtence of a like difference in a contrary ſenſe, the proportion being from 67 to 68. The difference itſelf may be not improbably derived from the manner of weighing the metal either at the Bank of England, or at the Mint at Paris, or at both; and as the reſpective reſults are ſtill leſs concordant than the criteria of Newton and Tillet, I have adopted, in my calculations of gold and ſilver ingots, that of Newton, as a middle courſe between the two proportions juſt mentioned, and the rather, as they are ſubject to ſome variation.

Kruſe has determined, by experiments made at Hamburgh, the equality of 60 marcs of Hamburgh to 451 ounces troy-weight of England; whence it would reſult that a marc of Hamburgh would be equivalent to 3608 grains, troy-weight.

Other experiments have led, in like manner, to a compariſon of 8 marcs of fine ſilver of Hamburgh with 65 ounces of ſtandard ſilver of England; whence it would reſult that a marc of Hamburgh would be equivalent to 3607½ grains, troy-weight; thus,

1 marc fine of Hamburgh = $3607\frac{1}{2}$ grs.
8 marcs fine of Hamb. = 65 ounces ſtandard of England
40 ounces ſtandard = 37 ounces fine
1 ounce fine = 480 grains.

The correctneſs of the former of ſuch reſults having been confirmed by ſeveral writers, I have adopted it in my calculations.

According to aſſays by Mr. Tillet, the marc of Holland weighs 4629 grains of France, of which 7021 are equivalent to the pound of England: it follows, that the marc of Holland is equivalent to $3797\frac{5}{8}$ grains Engliſh: in fact,

1 marc of Holland = $3797\frac{5}{8}$ grains
1 marc of Holland = 4629 grains of France
7021 grains of France = 5760 grains of England.

Kruſe has determined, by other aſſays, the relation of the marc of Holland to that of Hamburgh to be :: 19 : 20; and, as 60 marcs of the latter are equivalent to 451 ounces of England, a reſult very nearly the ſame is obtained by the following calculation:

1 marc of Holland = $3797\frac{17}{19}$ grains
19 marcs of Holland = 20 marcs of Hamburgh
60 marcs of Hamburgh = 451 ounces of England
1 ounce of England = 480 grains.

It is from ſuch data that I have deduced for my calculations the relation of the marc of Holland to the ounce of England to be :: 80 : 633; in fact,

1 marc of Holland = 3798 grains
80 marcs of Holland = 633 ounces of England
1 ounce of England = 480 grains.

According to Mr. Tillet, the marc of Portugal weighs 4318 grains of France, of which 7021 are equal to a pound of England; whence the marc of Portugal may be compared to $3542\frac{5}{11}$ grains, troy-weight; in fact,

1 marc of Portugal $=3542\frac{5}{11}$ grains
1 marc of Portugal $=$ 4318 grains of France
7021 grains of France $=$ 5760 grains of England.

From ſuch proportion, adopted by Marien, I have deduced the equivalence of 50 marcs of Portugal to 369 ounces of England, being a relation which gives very nearly the ſame reſult, and of which I have made uſe in my calculations.

1 marc of Portugal $=3542\frac{2}{5}$ grains
50 marcs of Portugal $=$ 369 ounces of England
1 ounce of England $=$ 480 grains.

It is obſervable, however, that the ingots of gold imported from Brazil do not always render the weight above mentioned, owing, no doubt, to an incorrectneſs in the mode of weighing in that country.

The actual importation of Portugal gold in coin is conſiderable; and 400 pieces known in Portugal under the name of *meyas dobras,* and in England under that of Joaneſe, when new, and received at the Bank of England, have been known to weigh 185 ounces; but as the general weight of thoſe purchaſed by the Bank is from 184 to $184\frac{1}{2}$ ounces, I have made uſe of the proportion of $184\frac{1}{4}$ ounces to 400 Joaneſe.

It may be obſerved, that, as the ſtandard of the moidores is inferior to that of the Joaneſe, the Bank purchaſes them at two-pence ſterling per ounce leſs than the latter.

According to aſſays made by Mr. Tillet, the marc of Caſtille is equivalent to 4328 grains of France, of which 7021 are equivalent to a pound of England; whence it would reſult that the marc of Caſtille would be equivalent to $3550\frac{2}{3}$ grains; in fact,

1 marc of Caſtille = $3550\frac{2}{3}$ grains
1 marc of Caſtille = 4328 grains of France
7021 grains of France = 5760 grains of England.

Spaniſh dollars being alſo an article of conſiderable commerce, furniſh other points of compariſon, in reſpect to the weights of England, either with thoſe of Spain, or with thoſe of other countries. In fact, admitting that 1000 new dollars weigh $117\frac{1}{4}$ marcs in Spain, and $867\frac{1}{2}$ ounces in England, we may hence compare the marc of Caſtille to $3551\frac{5}{13}$ grains troy-weight, according to the following example:

1 marc of Caſtille = $3551\frac{5}{13}$ grains
$117\frac{1}{4}$ marcs of Caſtille = $867\frac{1}{2}$ ounces of England
1 ounce of England = 480 grains.

It is from ſuch data that I have determined the equivalence of 5 marcs of Caſtille to 37 ounces of England, being the proportion of which I have made uſe in my calculations of gold and ſilver ingots, and which affords a reſult differing but little from the above mentioned.

1 marc of Caſtille = 3552 grains
5 marcs of Caſtille = 37 ounces of England
1 ounce of England = 480 grains.

1000 Spaniſh dollars, when quite new, have been known to weigh 868 ounces; it is but ſeldom, however, that they reach even the weight of $867\frac{1}{2}$ ounces, ſince thoſe imported from Cadiz, without having been circulated, do not, in general, render more than $866\frac{1}{4}$ ounces; while thoſe imported from other parts where the remittances are not received direct from South America, do not, in general, render more than 865 ounces; and it is from theſe latter proportions that I have determined my calculations of Spaniſh dollars.

FRANCE.

Previouſly to the introduction of the preſent ſyſtem of weights and meaſures, the appreciation of precious metals was thus effected.

That of their weights, by means of the marc divided into 8 ounces, of the ounce divided into 8 gros, of the gros divided into 3 deniers, and of the denier divided into 24 grains; the marc containing 4608 grains, and the ounce 576 grains.

In reſpect to their ſtandard, the abſolute purity of gold was expreſſed by the denomination of 24 carats; the carat being divided into 32 grains, in order to ſerve for the denomination of the inferior degrees of purity. The abſolute purity of ſilver was expreſſed, in a ſimilar manner, by the ſtandard of 12 deniers, each denier being compoſed of 24 grains.

In conſequence of the new ſyſtem, of which I ſhall ſpeak hereafter, the under mentioned appreciation has been ſubſtituted.

The weight of a cubic centimeter of diſtilled rain water, taken at the freezing point, or of the temperature of diſſolving ice, has been adopted as a fundamental unit, called *gramme;* and the decimal progreſſion of weights from ſuch unit is denoted by the denominations *decagramme, hectogramme, kilogramme,* and *myriagramme;* while the diviſions of the ſame weight are called *decigramme, centigramme,* and *milligramme.*

The National Inſtitute of Arts and Sciences having ſubmitted to the government, on the 4 Meſſidor, 7th year, a model or ſtandard of the kilogramme, executed in platina, and determining the value of the weights now in uſe, in reſpect to thoſe of which the uſe is aboliſhed, ſuch ſtandard was definitively adopted by a law in date of the 19 Frimaire, 8th year. The ſtandard itſelf repreſents $18827\frac{3}{20}$ grains of the antient marc.

The exact compariſon of the new weights with the old, eſtabliſhes the following ſcale of equivalence.

		Marcs.	onces.	gros.	grains.
A myriagramme	=	40	6	6	63,5
A kilogramme	=	4	0	5	35,15
A hectogramme	=		3	2	10,715
A decagramme	=			2	44,2715
A gramme . . .	=				18,82715
A decigramme	=				1,882715

An inverſe calculation affords the under mentioned approximate ſcale of equivalence.

		Grammes.
A marc, old weight, .	=	244,7529
An ounce	=	30,5941
A gros	=	3,8242
A denier	=	1,2747
A grain	=	0,0531

According to the calculation of Newton, the ounce of England is equivalent to 1,0158 ounce of France, which, in the modern weight, would correſpond with 31,0797 grammes; and, according to the aſſays of Tillet, to 1,0157 ounce, or 31,0765 grammes.

New denominations have alſo been employed to expreſs the degrees of purity of gold and of ſilver. The abſolute purity of both theſe metals is at preſent expreſſed by the ſtandard of 1000 *millièmes,* or 1000 thouſandths, that is, by an integral unit; and the fractions of that unit, alſo expreſſed in thouſandths, are uſed to denote the reſpective degrees of inferior fineneſs.

Each carat is thus equivalent to $41\frac{2}{3}$ milliemes, or the twenty-fourth part of 1000; and each grain, or thirty-ſecond part of a carat, correſponds with $1\frac{29}{96}$ millieme: in like manner, each denier of fine ſilver is repreſented by $83\frac{1}{3}$ milliemes, and each grain by $3\frac{17}{36}$ milliemes.

The ſtandard of gold, expreſſed in carats, or in grains, being multiplied by 1000, and the product divided by 24, or 768, reſpectively, the reſult will be the correſponding ſtandard in milliemes.

The ſtandard of ſilver, expreſſed in deniers, or in grains, being multiplied by 1000, and the product divided by 12, or by 288, reſpectively, the reſult will be the correſponding ſtandard in milliemes.

By multiplying a number of milliemes by 24, and cutting off from the product the three laſt figures, we obtain a number of carats which will correſpond with the ſtandard given; and, in like manner, by multiplying a number of milliemes by 12, and cutting off, as before, the three laſt figures, we obtain a correſponding number of deniers: the fractional remainder of the carats may be reduced into thirty-ſeconds, and that of the deniers into twenty-fourths, or into grains.

Gold and ſilver are ſold in France with reference to the ſtandard of abſolute purity, that is to ſay, the weight of ingots or bars is reduced into fine by multiplying the weight by the effective ſtandard, and dividing the product by 1000, that is, 1000 milliemes.

At the Mint at Paris, 1000 Spaniſh dollars, admitted to be quite new, are conſidered as weighing exactly 27 kilogrammes. Formerly, in ſeveral of the Provincial Mints, as well as in trade at Paris, 1000 dollars of the coinage previouſly to the year 1772 were received for

110 marcs weight, without any diſtinction in reſpect to their being more or leſs worn; and the ſame number of dollars of the ſame coinage, ſent to France by the way of Bayonne and of Limoges, weighed, in fact, when received at Paris, 110 marcs 1 ounce.

QUOTATION AT PARIS.

	ſold at, more or leſs,
Gold in bars	106 livres 15 ſols per ounce fine
Silver in bars	54 livres 15 ſols per marc fine
Guineas and Joaneſe	97 livres 10 ſols per ounce weight
Spaniſh dollars . . .	5 livres 8 ſols per dollar.

HAMBURGH.

The weight uſed for the appreciation of precious metals is a marc divided into 8 ounces, or unzen, 16 loths, 256 fenings, and 4352 eſchen. It is denominated *Marc of Cologne;* and, though it had the ſame origin as the marc properly ſo called (which is common to Germany in general), it is now a little heavier than the marc of Cologne, and correſponds with 3608 grains troy-weight.

In the aſſays, the ſtandard of pure gold is expreſſed by 24 carats, and each carat, or *karate,* is divided into 12 grains, or *graen,* in order to ſerve for the expreſſion of the degrees of relative purity of that metal. The ſtandard of fine ſilver is expreſſed by 16 loths, and the degrees of inferior purity by a proportionate number of loths, each of which is divided into 18 grains.

Gold is ſold by ducats of the purity of 23½ carats, containing, therefore, 282 grains of fine gold of the 288 which compoſe a marc; and the marc itſelf is equivalent in weight to 67 effective ducats. Thus, 47 marcs of fine gold, Cologne weight, correſpond with

3216 effective ducats, and each ducat contains $4\frac{14}{67}$ grains of ſine gold of the 288 ſerving to denote the marc.

In reſpect to ſilver in bars, and to Spaniſh dollars, they are ſold at ſo many marcs and ſhillings banco per marc ſine; that is, their weight, incluſive of the alloy reſpectively, is firſt reduced to the actual contents of pure metal, according to the acknowledged purity of the bars or of the dollars: thus, 1000 Spaniſh dollars of the new coinage, weighing 115 marcs of the purity of $\frac{14\frac{1}{3}}{16}$ loths, are reduced into fine by the following proportion:

48 : 43 :: 115 marcs weight : $103\frac{1}{48}$ marcs fine.

Kruſe ſays, that 1000 new dollars, which weigh 117 marcs 2 ounces in Spain, are equivalent to $115\frac{1}{2}$ marcs, or about that quantity, Hamburgh weight, denominated of Cologne; and that, admitting them to be of the purity of $14\frac{1}{3}$ loths, correſponding with 10 pennyweights 18 grains of Spain, they contain $103\frac{7}{16}$ marcs of fine ſilver. Thoſe dollars, however, which have been in circulation, do not weigh more than $115\frac{1}{8}$ marcs, or about that quantity; and it is aſſerted by Reiſhammer, in his *Manuel General*, page 287, printed in 1800, that 1000 dollars render at Hamburgh $103\frac{1}{3}$ marcs of fine ſilver of the weight there uſed, which agrees nearly with the weight of $115\frac{1}{8}$ marcs groſs.

The trade at Hamburgh being conſiderable in ſpecie and precious metals, I ſhall inſert an explanation of the quotation of ſome of their prices from the works of Buſch, printed in 1800.

QUOTATION AT HAMBURGH.

ſold at, more or leſs,

Gold in ingots	97½ ſhillings banco per ducat $\frac{47}{48}$ fine.
Silver in bars	27 marcs 12 ſhillings banco per marc fine.
Spaniſh dollars	27 marcs 6 ſhillings banco per marc fine.

Schleſwig and Holſtein currency ¾ per cent above bank money.

The money here alluded to is of ſilver, and the ſame which has been current, ſince 1787, in the duchies of Holſtein and Schleſwig: 9¼ crowns currency make a mark of fine ſilver of Cologne; thus, 9¼ crowns currency are exchanged for 27 marcs 10 ſhillings banco, with addition of the agio ſtated in the quotation.

Hamburgh currency (Hamburger courant), 22.

That which we are about to conſider is the current money, the par of which, in reſpect to bank money, is in the proportion of $123\frac{1}{13}$: 100. As, however, the courſe above mentioned, 22, denotes that the current money is at $1\frac{1}{13}$ below par, it follows, that 122 marcs of current money are exchanged for 100 marcs banco.

Pruſſian currency (Preuſch courant), 54½.

We have now to conſider of Pruſſian crowns, and of pieces of 8 or 4 bon gros. A marc of fine ſilver is equivalent to 14 Pruſſian crowns, each of which is worth 24 bons gros, and ſhould be of the value of 48 ſhillings banco.

It is underſtood, by ſuch quotation, that 154½ Pruſſian marcs or crowns are ſold for 100 marcs or crowns bank money.

Denmark and Holſtein currency, 23¾.

According to this quotation, 123¾ marcs currency of thoſe countries are received for 100 marcs banco.

French louis d'or .	12 marcs 7 ſhillings banco each.
Fredrics	10 marcs 10 ſhillings banco each.
French crowns . . .	49¼ ſhillings banco each.

French crowns are alſo ſold by the marc of fine ſilver for marcs and ſhillings banco.

HOLLAND.

In the commerce of precious metals, the marc of that weight called troy-weight is adopted at Amſterdam, and in the other cities of Holland. This marc is divided into 8 ounces, the ounce into 20 engels, or eſtelins, and the engel into 32 as, which are again divided and ſubdivided into quarts, troykens, and deuſkens; but the three latter are no longer in uſe. The marc is therefore equivalent to 5120 as, and the ounce to 640 as.

In the aſſays of gold, the abſolute purity of that metal is expreſſed by the ſtandard of 24 *karaaten*, or carats, each of which is divided into 12 *graanen*, or grains, to be indicatory of the different degrees of relative fineneſs. In like manner, the ſtandard of 12 *penningen*, or pennyweights, denotes the abſolute purity of ſilver, and each pennyweight is divided into 24 grains.

In the commerce of ſpecie, the ſale is effected either by the piece, or with reference to the marc of fine ſilver, or to the marc with the alloy; and the price is ſtipulated in florins and ſtivers currency. The price of gold and ſilver in bars is ſtipulated in the ſame money, but with reference to the ſtandard of abſolute purity; that is, the quantity of each metal, incluſive of the alloy reſpectively, is firſt reduced to the actual contents of pure metal, according to the acknowledged purity of the ingots. Thus, a bar of ſilver weighing 16 marcs, of the purity of $\frac{9}{12}$ pennyweights, would be reduced to 12 marcs of fine ſilver, by the following proportion:

12 : 9 :: 16 marcs weight : 12 marcs fine.

Spaniſh dollars, which ſince the year 1795 are ſold by the dollar in ſtivers currency, are received at the Bank of Amſterdam under the following arrangement. They are weighed in bags of 100 marcs reſpectively, and to each bag, being fully of that weight, 2 dollars are added. The Bank then advances to the perſon who makes the depoſit 2150 florins for each bag of dollars of the coinage after 1772, and 2200 florins for thoſe of the preceding coinage; and 912 or 913 dollars are required to compoſe a bag of 100 marcs.

The gold coins of Portugal are received at the Bank upon the footing of 310 florins bank money for each marc groſs weight.

QUOTATION.

Gold, in bars or in coins, is ſold at an agio of 11 per cent, more or leſs, above 355 florins currency, being the price fixed by the law . . . . per marc fine.

Silver in bars, 25 florins 15 ſtivers curr. per marc fine.

Spaniſh dollars, 52½ ſtivers currency . . per dollar.

PORTUGAL.

In the appreciation of precious metals they make uſe of the marc, a weight which correſponds with 3542⅖ grains troy-weight, and which is divided into 8 onzas, 64 outavas, 192 eſcrupulos, and 4608 graons or grains.

Fine gold is expreſſed by the ſtandard of 24 *quilates* or carats, to which the ſubordinate degrees of purity are referred by a relative number of carats, each of which is divided into 4 grains. In like manner, the ſtandard of fine ſilver is fixed at 12 *dinheiros*, or pennyweights; and the ſubdiviſion of the pennyweight, adopted for the expreſſion of the ſubordinate degrees of purity, is that of 24 grains.

Gold, in bars, is ſold in Portugal by the outava, at a price either relative to the purity of gold in coin, which is that of 22 carats, or to the purity of gold duſt, which is that of 21¾ to 22 carats; or, laſtly, to the purity of effective ingots.

Silver, in bars, is ſold by the ounce, at a price either relative to the ſtandard of abſolute purity, or to that of the wrought ſilver, which is fixed at 10¼ pennyweights.

The exportation both of gold and ſilver in bars, and of the coins of the country in thoſe metals, is prohibited; but it is, nevertheleſs, ſo conſiderable, being an indiſpenſable means of commerce in reſpect to Portugal, that it would be the intereſt of the government to permit the exportation upon payment of a duty ſufficient to be conſidered as a ſource of revenue, and, at the ſame time, not of that magnitude which would encourage illcit traffic in this buſineſs.

Spaniſh dollars are ſold in Portugal by the marc, but more generally by the dollar. The importation of this coin from the frontiers of Spain is very conſiderable.

SPAIN.

In weighing precious metals, a marc is uſed, having ſeveral denominations, but which is beſt known under that of Marco Caſtellano, or Marc of Caſtille: it is equivalent to 3550⅔ grains troy-weight, and is divided as follows:

In reſpect to gold, into 8 onzas or ounces, 50 caſtellanos, 64 ochavas, 128 adarmes, 400 tomines, and 4800 granos or grains.

In reſpect to ſilver, into 8 ounces, 50 caſtellanos, 64 ochavas, 128 adarmes, 384 tomines, and 4608 grains.

In ſome provinces, however, either a weight, differing from that of Caſtille, is uſed, or the ſame weight is differently divided.

In Catalonia, the marc is equivalent to 1⅙ marcs of Caſtille; ſo that 7 marcs of Caſtille are equal to 6 of Catalonia, each of which is divided into 8 ounces, 32 quartos, and 128 argienſos or adarmes. The argienſo weighs 36 granos; ſo that the 4608 grains, compoſing the marc of Catalonia, correſpond to 5376 grains of Caſtille.

In the titular kingdom of Valencia they make uſe of a marc which is heavier than that of Caſtille, in the proportion of 16 to 15½: thus, 32 marcs of Caſtille are equal to 31 marcs of Valencia, and each of the latter is divided in the ſame manner as the marc of Catalonia.

In Arragon, the marc is the ſame as that of Caſtille, but it is divided into 8 ounces, 32 quartos, 128 adarmes, and 4096 grains.

The ſtandard of fine gold is, throughout Spain, 24 *quilates* or carats; the carat is divided into 4 grains, and each grain into 8 parts, having no ſpecific denomination in order to ſerve for the expreſſion of the relative degrees of fineneſs of that metal.

The ſtandard of fine ſilver is 12 dineros or pennyweights, each of which is divided into 24 grains for the ſame purpoſe.

Gold is ſold, in Spain, by the caſtellano, and the price, which is ſtipulated in reals of plate, is underſtood to be as for gold at 22 carats and a half. The price of ſilver in bars is alſo in reals of plate, by the marc fine of Caſtille.

The duty payable to the King of Spain upon dollars exported from his European dominions was fixed in 1750 at 3 per cent, and in 1768 it was augmented to 4 per cent. The exportation has been ſince made a matter of privilege granted in 1794 to the Bank of St. Charles, at Madrid, in favour of which, the duty was increaſed to 4½ per cent; by ſubſequent regulations, however, it appears that there has been ſtill another augmentation, for, in 1804, the dollars which were exported from Cadiz to London paid a duty of 1323 reals 23 maravedis of vellon per bag of 1000 dollars, which is about 6⅔ per cent.

The exportation both of gold and ſilver in ingots is prohibited without the king's licence, the policy of which, however, as well as of the duty levied upon the exportation of dollars, is very queſtionable. In fact, as the exportation of ſpecie or bullion is an indiſpenſable means of commerce in reſpect to Spain, the contraband conveyance of dollars from that country to Portugal is immenſe, and, even at Cadiz, the ſhipments are at once conſiderable and regularly conducted; the riſk of this illicit traffic being actually calculated at no more than 2 per cent. It would, therefore, be the intereſt of his Catholic Majeſty to permit the free exportation both of bullion and ſpecie at a duty of 2 per cent, whence the ſtate would receive, as a revenue, what is now the price of the violation of its regulations, and, in its effects, a tax to the ſame or greater extent upon commerce.

OF THE CALCULATION OF GOLD AND SILVER IN SPECIE AND IN BULLION.

After having treated of the ſeveral modes of ſale of precious metals, and of the relation of the weights employed in this branch of buſineſs, I have now to ſpeak of the calculations in uſe in accompting-houſes. In order to effect the calculations referred to, it is neceſſary to have a preliminary knowledge of the relation of weights, of the difference between the reſpective ſtandards, and of the conditions upon which the metals are ſold, and then to determine, by a rule of equation, according to the quotations of prices received from abroad, and with reference to the ſuppoſed amount of charges, either the price which an ounce, a marc, or any other given quantity, may coſt, or the rate of exchange which the ſale may eſtabliſh between the two contracting places. It is obvious that ſuch reſults may be obtained as well by ſimulate as by real accounts; but ſuch accounts are not always to be procured, and the operations which are the conſequence of them are of themſelves much longer than thoſe performed by a rule of equation.

It is expedient, however, to point out that the reſults are the ſame by both calculations; and, with this view, I ſhall deſcribe an operation founded upon real accounts of the preſent year, which cannot fail of proving intereſting, as it compriſes the mode of payment at preſent adopted in Portugal, which is but little known in this country.

INVOICE

From Liſbon, March 7, 1805.	Reis.
150 meyas dobras, or Joaneſe, at reis 6ø400	960ø000
Premium ½ per cent for the ſelection of pieces (the leaſt worn)	4ø800
Freight ½ per cent	4ø800
	969ø600
For the reduction of 969ø600 reis effective money into reis legal money, at 12 per cent diſcount	61ø890
Total	1031ø490

Account of Sales at London, April 3, 1805.

SALE.

150 Joaneſe, weighed 69 oz. 1 dwt. 21 grs. at £4 . .				£276	7	6

CHARGES.

Inſurance on £280, at 2 guineas per cent	£5	17	7			
Policy, ¼ per cent on £300	0	15	0			
Commiſſion, ½ . . on £280	1	8	0			
Carriage from Falmouth, at 4 ſhillings per £100	0	11	0			
Petty charges	0	0	9			
Commiſſion, ½ per cent on £276 7 6	1	7	8			
				10	0	0
Net proceeds				£266	7	6

In order now to diſcover the courſe of exchange which this ſale eſtabliſhes between Liſbon and London, it is neceſſary to reduce £266 7 6 into pence, and to ſtate the following proportion:

1031ȸ490 reis : 63930 pence :: 1000 reis : x, the reſult of which is 62; and, as Liſbon drew upon London at 61, the profit reſulting from the operation was in the proportion of 61 to 62.

It will be obſerved, that as Liſbon tranſmitted effective money, and received the amount of its drafts upon London in legal money, the invoice of the purchaſe is of courſe incluſive of the diſcount of 12 per cent upon half the payment in paper money; ſuch diſcount being computed according to the calculation which I have exemplified in page 180 of the firſt volume. It will be alſo obſerved, that 150 Joaneſe, weighing 69 oz 1 dwt 21 grains, eſtabliſh the proportional equivalence of 400 Joaneſe to 184¼ ounces troy-weight; and, laſtly, that the aggregate of the charges at Liſbon and at London amounts to 4¾ per cent. From theſe particulars, I ſhall deduce the ſame reſult by the following rule of equation.

PROPOSITION.

A quantity of Joaneſe was purchaſed at Liſbon while the diſcount upon paper money was at 12 per cent, and remitted to London, where it was ſold at the rate of 4 pounds ſterling per ounce. Required the courſe of exchange, between the two places, reſulting from the ſale; the aggregate charges being 4¾ per cent.

EQUATION.

1000 reis legal money = x
100 reis legal money = 94 reis effective money
6400 reis effective money = 1 Joaneſe
400 Joaneſe = 184¼ ounces of England
1 ounce = 4 pounds ſterling
1 pound ſterling = 240 pence ſterling
104¾ = 100 with charges.

In this equation I have placed 1000 reis, being the certain price of the exchange, as the firſt term of the dividend, ſince the object of the operation is that of aſcertaining the rate of exchange between Liſbon and London. I have effected the general reduction of the legal money into effective, by oppoſing 100 to 100 minus 6, being half the diſcount; and, laſtly, I have placed the charges in the diviſor, by oppoſing 104¾ to 100; for as the reſult of the operation, or the eventual rate of exchange, will be profitable in proportion as it may be numerically higher, the charges are to be deducted.

The equation being thus arranged, I ſhall abridge the calculation, as follows:

$$\begin{array}{rrrcll}
 & & & & 1\cancel{0}\cancel{0}\cancel{0} & \\
 & & 1\cancel{0}\cancel{0} & = & \cancel{9}\cancel{4} & 47 \\
4 & \cancel{32} & \cancel{6}\cancel{4}\cancel{0}\cancel{0} & = & 1 & \\
 & & \cancel{4}\cancel{0}\cancel{0} & = & 184\frac{1}{4} & \\
 & & 1 & = & \cancel{4} & \\
 & & 1 & = & \cancel{2}\cancel{4}\cancel{0} & 3 \\
 & & 104\frac{3}{4} & = & \cancel{1}\cancel{0}\cancel{0} &
\end{array}$$

Firſt, I reject 6 ciphers in each column, and then the two ſimilar numbers, 4 pounds and 4 Joaneſe; the latter being the remainder of the 400 Joaneſe after the ſuppreſſion of the ciphers. I divide each of the numbers

64 and 94 by 2, which gives the quotients 32 and 47; and then I divide the quotient 32 and the number 24 each by 8, which gives the quotients 4 and 3; whence the diviſor and dividend are reduced to the following numbers:

Diviſor.	Dividend.
4	47
$104\frac{3}{4}$	$184\frac{1}{4}$
	3

Proceeding to effect the operation, I find the reſult to be 62, being the ſame as that which I had obtained by the compariſon of the accounts of purchaſe and ſale.

It is to be obſerved, however, that the equations which reſult from the analyſis of various propoſitions are not always ſuſceptible of a ſimilar abridgment: there are even ſeveral which have ſcarcely any ſuch ſuſceptibility, and in particular the operations between Amſterdam and London, Hamburgh and London.

It is for this reaſon that logarithms are applied to calculations of gold and ſilver, ſpecie and bullion; and ſo great is the ſimplification introduced by their uſe, that all the logarithms of the invariable numbers of each equation are reduced to a ſingle fixed logarithm to be employed with the logarithms of the variable numbers. In following this method, I have pointed out at the end of each equation the variable numbers, and determined the fixed logarithm to be employed.

In order to demonſtrate the great advantage derived from the uſe of logarithms in ſimilar calculations, I ſhall now inſert another real operation.

PROPOSITION.

Hamburgh orders Liſbon to purchaſe a quantity of Spaniſh dollars at 850 reis per dollar, and to forward the ſame quantity to London, drawing upon Hamburgh for the amount. Liſbon effects the purchaſe, and draws upon Hamburgh at 43$\frac{7}{8}$, at 90 days date. London ſells the dollars at 66 pence ſterling per ounce, and remits the proceeds to Hamburgh in direct remittances at 35 8, payable at 2$\frac{1}{2}$ uſances. The charges at Liſbon and at London amount to 5$\frac{7}{16}$ per cent, and the intereſt of the funds employed by Hamburgh in the interval between the payment of the drafts from Liſbon, and the receipt of the amount of the remittances from London, is equivalent to $\frac{1}{2}$ per cent. Required to find the price of the dollars per ounce at London, either incluſive or excluſive of the charges, and alſo the rate per cent of profit which Hamburgh derives from the operation.

The object of this calculation being that of finding the price of an ounce, I ſtate 1 ounce as the firſt term of the following equation:

1 ounce
865 ounces = 1000 dollars
1 dollar = 850 reis
400 reis = 43$\frac{7}{8}$ grotes
12 grotes = 1 ſhilling Flemiſh
35$\frac{2}{3}$ ſhill. Flemiſh = 1 pound ſterling
1 pound ſterling = 240 pence ſterling.

Upon examination of this equation, I perceive that the variable numbers are 850 reis, the coſt of a dollar at Liſbon; 43$\frac{7}{8}$ grotes, the courſe of exchange between Liſbon and Hamburgh; and 35$\frac{2}{3}$ ſhillings Flemiſh, the courſe of exchange at London upon Hamburgh.

Hence, after adding the logarithm correſponding to the other numbers in each column, which are invariable, I deduct the ſum of the logarithms of the dividend from the ſum of the logarithms of the diviſor, and obtain 123805 as a fixed logarithm, to be employed in the preſent and in any ſimilar operation. I have, therefore, now to combine this fixed logarithm with the logarithms of the variable numbers above mentioned, ſubjoining to the operation the amount of the charges and of the intereſt, making $5\frac{15}{16}$ per cent; and alſo the price of 66 pence per ounce, at which the dollars were ſold, and by which I ſhall diſcover the per centage of profit.

SOLUTION BY LOGARITHMS.

Price at Liſbon	850	=	292942	
Liſbon on Hamburgh . .	$43\frac{7}{8}$	+	164222	
			457164	
London on Hamburgh .	35 8	—	155226	
			301938	
Fixed logarithm		—	123805	
			178133	= $60\frac{7}{16}$ pence
Charges and intereſt . . .	$5\frac{15}{16}$	+	2505	
			180658	= $64\frac{1}{32}$ pence
Rate per cent of profit . .	$3\frac{1}{16}$	+	1316	
			181954	= 66 pence.

In the operation juſt ſtated, after having added the logarithms of the numbers 850 and $43\frac{7}{8}$, which are in the dividend, I have deducted ſucceſſively the logarithm of the number 35 8, which is in the diviſor, and the fixed logarithm appertaining to the latter. The logarithm 178133, which remains after ſuch ſubtractions, correſponds in the table to the number $60\frac{7}{16}$, which denotes the price per ounce, and without the charges, of the dollars at London. Proceeding to add, according to the rule given in page 351 of the firſt volume, the ſame logarithm to the logarithm of $5\frac{15}{16}$, being the amount of the charges and of the intereſt, I have obtained the logarithm 180638, correſponding to the number $64\frac{1}{32}$, which denotes the price of an ounce of the dollars at London, with the charges. Looking now to the table for the logarithm of 66, being the rate of ſale of an ounce of dollars at London, the difference between 181954, logarithm of 66, and 180638, logarithm of $64\frac{1}{32}$, is 1316, which, being added to 200000, the logarithm of 100, gives a logarithm of 201316, which, by its correſpondence in the table to the natural number $103\frac{1}{16}$, denotes that the profit reſulting from the operation is at the rate of $3\frac{1}{16}$ per cent.

Such, then, is the effect of the admirable invention of logarithms, that, by applying them to the calculations of commerce, they preſent a faithful repreſentation of operations, which may be reduced, extended, or proved, with the greateſt facility.

In reſpect to adding or deducting the charges, I ſhall confine myſelf to ſaying, that, whenever the price of an ounce be required, the charges muſt be added to the ſimple reſult, ſince it is evident that they neceſſarily increaſe the price at which the ounce ſtands in; and that, when it be required to find the rate of exchange, the charges muſt be added, if the place where the calculation is made give the certain price, and deducted if the ſame place give the uncertain price. In fact, in the former caſe, the reſult will be advantageous in proportion as it may be numerically low; and in the ſecond, it will be advantageous in proportion as it may be numerically high.

Calculations of gold and ſilver ſpecie and bullion are proved, either by determining an inverſe equation, or by finding the courſe of exchange when the price of an ounce has been obtained, or the price of an ounce when the courſe of exchange has been obtained.

EXAMPLE.

Required the price at London of an ounce of Spaniſh dollars bought at Liſbon at 859 reis per dollar; the courſe of exchange of Liſbon on London being at 63, and the aggregate charges 3 per cent.

EQUATION.

1 ounce = $64\frac{7}{16}$ pence
865 ounces = 1000 dollars
1 dollar = 859 reis
1000 reis = 63 pence
100 with charges = 103.

PROOF.

Required the courſe of exchange between Liſbon and London reſulting from the ſale at London, at $64\frac{7}{16}$ pence, of an ounce of dollars bought at Liſbon at 859 reis per dollar, the charges amounting to 3 per cent.

EQUATION.

1000 reis = 63 pence
859 reis = 1 dollar
1000 dollars = 865 ounces
1 ounce = $64\frac{7}{16}$ pence
103 = 100 with charges.

By inſerting in the proof the price of an ounce, as obtained by the firſt equation, it is evident that the ſecond equation muſt reproduce the courſe of exchange inſerted in the firſt equation, and vice verſâ.

LONDON.

Proportion of certain Weights.

12 oz ſtandard gold = 11 ounces fine gold
40 oz ſtandard ſilver = 37 ounces fine ſilver
215 oz ſtandard ſilver = 222 ounces new dollars
43 oz fine ſilver = 48 ounces new dollars
175 lbs troy-weight = 144 lbs avoirdupois weight

63 oz of England = 64 ounces of France
63 ditto = 8 marcs of France
3218 ditto = 100 kilogrammes of France
451 ditto = 60 marcs of Hamburgh
633 ditto = 80 marcs of Holland
369 ditto = 50 marcs of Portugal
37 ditto = 5 marcs of Spain
37 ditto = 250 caſtellanos of Spain
273 oz ſtandard gold = 34 marcs ducat gold of Hamb.
65 oz ſtand. ſilver = 8 marcs fine ſilver of Hamb.

1000 doubloons quite new = 868 ounces of England
400 Joaneſe quite new = 185 ounces of England.

1000 dollars quite new =
$867\frac{1}{2}$ ounces of England
$110\frac{1}{8}$ marcs of France
27 kilogrammes of France
$115\frac{3}{8}$ marcs of Hamburgh
$109\frac{5}{8}$ marcs of Holland
$117\frac{1}{2}$ marcs of Portugal
$117\frac{1}{4}$ marcs of Spain.

LONDON AND FRANCE.

Gold in Bars imported.

Required the price in London of an ounce ſtandard of gold in bars, bought at Paris at 106 livres 15 ſols tournois per ounce fine, the courſe of exchange being at 24 4.

EQUATION.

1 ounce ſtandard = x
12 ounces ſtandard = 11 ounces fine
63 ounces of England = 64 ounces of France
1 ounce fine = $106\frac{3}{4}$ livres tournois
$24\frac{1}{5}$ livres tournois = 20 ſhillings ſterling.

Standard gold is reduced into fine gold by oppoſing 12 to 11, and the reſult of the equation is in ſhillings ſterling. The only variable numbers are the price of gold at Paris, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

127008 fixed logarithm
Price at Paris . . . $106\frac{3}{4}$ + 202837

329845
Courſe of exchange 24 4 — 138382

191463 = $82\frac{5}{32}$ reſult.

N. B. The charges are to be added.

LONDON AND FRANCE.

Gold in Bars exported.

Required the price at Paris of an ounce fine of gold in bars, bought in London at 3 pounds 19 ſhillings ſterling per ounce ſtandard, the courſe of exchange of London on Paris being at 24 6.

EQUATION.

1 ounce fine = x
64 ounces of France = 63 ounces of England
11 ounces fine = 12 ounces ſtandard
1 ounce ſtandard = 79 ſhillings ſterling
20 ſhillings ſterling = $24\frac{3}{10}$ livres tournois.

Fine gold is reduced into ſtandard gold by oppoſing 11 to 12, and the reſult of the equation is in livres tournois. The only variable numbers are the price of gold in London, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

Price in London 79 = 189763
Courſe of exchange 24 6 + ·138561
328324
Fixed logarithm . . . . . — 127008
201316 = $103\frac{1}{16}$ reſult.

N. B. Reduce the price of gold at London into ſhillings, and add the charges.

LONDON AND FRANCE.

Gold in Bars.

Required the courſe of exchange between London and Paris reſulting from the ſale in London, at 4 pounds 1 ſhilling 3 pence ſterling, of an ounce ſtandard of gold in bars, bought at Paris at 105 livres 17 ſols 6 deniers tournois per ounce fine.

EQUATION.

1 pound ſterling = x
1 pound ſterling = 20 ſhillings ſterling
$81\frac{1}{4}$ ſhillings ſterling = 1 ounce ſtandard
12 ounces ſtandard = 11 ounces fine
63 ounces of England = 64 ounces of France
1 ounce fine = $105\frac{7}{8}$ livres tournois.

Standard gold is reduced into fine gold by oppoſing 12 to 11, and the reſult of the equation is in livres and ſols tournois. The only variable numbers are the price of gold either at Paris or in London.

SOLUTION BY LOGARITHMS.

127008 fixed logarithm
Price at Paris . . . $105\frac{7}{8}$ + 202479

329487
Price in London . . $81\frac{1}{4}$ — 190982

138505 = 24 $5\frac{1}{3}$ reſult.

N. B. Reduce the price of gold at London into ſhillings, and add the charges.

This operation to find the courſe of exchange is the ſame, whether the gold in bars be imported or exported.

LONDON AND FRANCE.

Silver in Bars imported.

Required the price in London of an ounce ſtandard of ſilver in bars, bought at Paris at 54 livres 5 ſols tournois per marc fine, the courſe of exchange of Paris on London being at 25 6.

EQUATION.

1 ounce ſtandard = x
40 ounces ſtandard = 37 ounces fine
63 ounces of England = 8 marcs of France
1 marc fine = $54\frac{1}{4}$ livres tournois
$25\frac{3}{10}$ livres tournois = 240 pence ſterling.

Standard ſilver is reduced into fine ſilver by oppoſing 40 to 37, and the reſult of the equation is in pence ſterling. The only variable numbers are the price of ſilver at Paris, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

145010 fixed logarithm
Price at Paris . . . $54\frac{1}{4}$ + 173440

318450
Courſe of exchange 25 6 — 140312

178138 = $60\frac{7}{16}$ reſult.

N. B. The charges are to be added.

LONDON AND FRANCE.

Silver in Bars exported.

Required the price at Paris of a marc fine of ſilver in bars, bought in London at 5 ſhillings 2 pence ſterling per ounce ſtandard, the courſe of exchange of London on Paris being at 24 8.

EQUATION.

1 marc fine = x

8 marcs of France = 63 ounces of England

37 ounces fine = 40 ounces ſtandard

1 ounce ſtandard = 62 pence ſterling

240 pence ſterling = $24\frac{2}{5}$ livres tournois.

Fine ſilver is reduced into ſtandard ſilver by oppoſing 37 to 40, and the reſult of the equation is in livres tournois. The only variable numbers are the price of ſilver in London, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

Price in London . 62 = 179239

Courſe of exchange 24 8 + 138739

317978

Fixed logarithm . . . . . . — 145010

172968 = $53\frac{2}{3}$ reſult.

N. B. Reduce the price of ſilver at London into pence, and add the charges.

LONDON AND FRANCE.

Silver in Bars.

Required the courſe of exchange between London and Paris, reſulting from the ſale in London, at 5 ſhillings 8½ pence ſterling, of an ounce ſtandard of ſilver in bars, bought at Paris at 54 livres 10 ſols tournois per marc fine.

EQUATION.

1 pound ſterling = x
1 pound ſterling = 240 pence ſterling
68½ pence ſterling = 1 ounce ſtandard
40 ounces ſtandard = 37 ounces fine
63 ounces of England = 8 marcs of France
1 marc fine = 54½ livres tournois.

Standard ſilver is reduced into fine ſilver by oppoſing 40 to 37, and the reſult of the equation is in livres and ſols tournois. The only variable numbers are the price of ſilver either at Paris or in London.

SOLUTION BY LOGARITHMS.

145010 fixed logarithm
Price at Paris . . . . 54½ + 173640
318650
Price in London . . . 68½ — 183569
135081 = 22 $8\frac{7}{12}$ reſult.

N. B. Reduce the price of ſilver at London into pence, and add the charges.

This operation to find the courſe of exchange is the ſame, whether the ſilver in bars be imported or exported.

LONDON AND FRANCE.

Spaniſh Dollars imported.

Required the price in London of an ounce of new dollars, bought at Paris at 5 livres 7 ſols 9 deniers tournois per dollar, the courſe of exchange of Paris on London being at 23 18.

EQUATION.

1 ounce = x

865 ounces = 1000 dollars

1 dollar = $107\frac{3}{4}$ ſols tournois

20 ſols tournois = 1 livre tournois

$23\frac{9}{10}$ livres tournois = 240 pence ſterling.

The reſult of the equation is in pence ſterling, and the only variable numbers are the price of dollars at Paris, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

114216 fixed logarithm

Price at Paris . . . $107\frac{3}{4}$ = 203242

317458

Courſe of exchange 23 18 — 137840

179618 = $62\frac{13}{24}$ reſult.

N. B. Reduce the price of a dollar at Paris into ſols tournois, and add the charges.

LONDON AND FRANCE.

Spaniſh Dollars exported.

Required the price at Paris of new dollars bought in London at 5 ſhillings 1 penny per ounce, the courſe of exchange of London on Paris being at 24 2.

EQUATION.

1 dollar = x
1000 dollars = 865 ounces
1 ounce = 61 pence ſterling
240 pence ſterling = $24\frac{1}{10}$ livres tournois
1 livre tournois = 20 ſols tournois.

The reſult of the equation is in ſols tournois per dollar, and the only variable numbers are the price of dollars in London, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

Price in London . . 61 = 178533
Courſe of exchange 24 2 + 138202
316735
Fixed logarithm . . . . . — 114216
202519 = $105\frac{31}{32}$ reſult.

N. B. Reduce the price of dollars at London into pence, and add the charges.

LONDON AND FRANCE.

Spaniſh Dollars.

Required the courſe of exchange between London and Paris reſulting from the ſale in London, at 5 ſhillings 7 pence ſterling, of an ounce of new dollars, bought at Paris at 5 livres 8 ſols 3 deniers tournois per dollar.

EQUATION.

1 pound ſterling = x
1 pound ſterling = 240 pence ſterling
67 pence ſterling = 1 ounce
865 ounces = 1000 dollars
1 dollar = 108¼ ſols tournois
20 ſols tournois = 1 livre tournois.

The reſult of the equation is in livres and ſols tournois, and the only variable numbers are the price of dollars either at Paris or in London.

SOLUTION BY LOGARITHMS.

114216 fixed logarithm
Price at Paris . . . . 108¼ + 203443
317659
Price in London . . . 67 — 182607
135052 = 22 8⅓ reſult.

N. B. Reduce the price of dollars at London into pence, and add the charges.

This operation to find the courſe of exchange is the ſame, whether the Spaniſh dollars be imported or exported.

LONDON AND FRANCE.

Guineas.

Required the price at Paris of an ounce of guineas remitted from London, the courſe of exchange of London on Paris being at 23 15.

EQUATION.

1 ounce = x
64 ounces of France = 63 ounces of England
1 ounce = 480 grains
128 grains = 1 guinea
20 guineas = 21 pounds ſterling
1 pound ſterling = $23\frac{3}{4}$ livres tournois.

The reſult of the equation is in livres tournois, and the only variable number is the courſe of exchange.

SOLUTION BY LOGARITHMS.

58838 fixed logarithm
Courſe of exchange 23 15 + 137566

196404 = $92\frac{1}{16}$ reſult.

N. B. The charges are to be added.

LONDON AND FRANCE.

Guineas.

Required the courſe of exchange between London and Paris reſulting from the ſale at Paris, at 97 livres 7 ſols 6 deniers tournois, of an ounce of guineas remitted from London.

EQUATION.

1 pound ſterling = x
21 pounds ſterling = 20 guineas
1 guinea = 128 grains
480 grains = 1 ounce
63 ounces of England = 64 ounces of France
1 ounce of guineas = $97\frac{3}{8}$ livres tournois.

The reſult of the equation is in livres and ſols tournois, and the only variable number is the price of guineas at Paris.

SOLUTION BY LOGARITHMS.

Price at Paris $97\frac{3}{8}$ . . . . . = 198845
Fixed logarithm . . . . . . — 58838

140007 = 25 $2\frac{1}{2}$ reſult.

N. B. The charges are to be added.

LONDON AND HAMBURGH.

Gold in Bars imported.

Required the price in London of an ounce ſtandard of gold in bars, bought at Hamburgh at 98 ſhillings banco per ducat $\frac{23\frac{1}{2}}{24}$ carats fine, the courſe of exchange of Hamburgh on London being at 34 2.

EQUATION.

1 ounce ſtandard = x
451 ounces of England = 60 marcs of Hamburgh
47 marcs $\frac{44}{48}$ fine = 44 marcs $\frac{47}{48}$ fine
1 marc = 67 ducats
1 ducat = 98 ſhillings banco
6 ſhillings banco = 1 ſhilling Flemiſh
34$\frac{1}{6}$ ſhillings Flemiſh = 20 ſhillings ſterling.

Standard gold is reduced into ducat gold by oppoſing 47 to 44, and the reſult of the equation is in ſhillings ſterling. The only variable numbers are the price of gold at Hamburgh, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

144427 fixed logarithm
Price at Hamburgh . . 98 + 199123
343550
Courſe of exchange . 34$\frac{1}{6}$ — 153360
190190 = 79$\frac{25}{32}$ reſult.

N. B. The charges are to be added.

LONDON AND HAMBURGH.

Gold in Bars exported.

Required the price at Hamburgh of a ducat $\frac{23\frac{1}{2}}{24}$ carats fine of gold in bars, bought in London at 3 pounds 19 ſhillings 11 pence ſterling per ounce ſtandard, the courſe of exchange of London on Hamburgh being at 34 3.

EQUATION.

1 ducat = x
67 ducats = 1 marc
60 marcs of Hamburgh = 451 ounces of England
44 ounces $\frac{47}{48}$ fine = 47 ounces $\frac{44}{48}$ fine
1 ounce ſtandard = $79\frac{11}{12}$ ſhillings ſterling
20 ſhillings ſterling = $34\frac{1}{4}$ ſhillings Flemiſh
1 ſhilling Flemiſh = 6 ſhillings banco.

Ducat gold is reduced into ſtandard gold by oppoſing 44 to 47, and the reſult of the equation is in ſhillings banco. The only variable numbers are the price of gold in London, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

Price in London . . . $79\frac{11}{12}$ = 190264
Courſe of exchange . $34\frac{1}{4}$ + 153466
343730
Fixed logarithm . . . . — 144427
199303 = $98\frac{13}{32}$ reſult.

N. B. Reduce the price of gold at London into ſhillings, and add the charges.

LONDON AND HAMBURGH.

Gold in Bars.

Required the courſe of exchange between London and Hamburgh reſulting from the ſale in London, at 4 pounds 1 ſhilling ſterling, of an ounce ſtandard of gold in bars bought at Hamburgh at $96\frac{3}{8}$ ſhillings banco per ducat $\frac{23\frac{1}{2}}{24}$ carats fine.

EQUATION.

1 pound ſterling = x
1 pound ſterling = 20 ſhillings ſterling
81 ſhillings ſterling = 1 ounce ſtandard
451 ounces of England = 60 marcs of Hamburgh
47 marcs $\frac{44}{48}$ fine = 44 marcs $\frac{47}{48}$ fine
1 marc = 67 ducats
1 ducat = $96\frac{3}{8}$ ſhillings banco
6 ſhillings banco = 1 ſhilling Flemiſh.

Standard gold is reduced into ducat gold by oppoſing 47 to 44, and the reſult of the equation is in ſhillings and grotes Flemiſh banco. The only variable numbers are the price of gold either at Hamburgh or in London.

SOLUTION BY LOGARITHMS.

144427 fixed logarithm
Price at Hamburgh . $96\frac{3}{8}$ + 198396
342823
Price in London . . . 81 — 190849
151974 = 33 1 reſult.

N. B. Reduce the price of gold at London into ſhillings, and add the charges.

This operation to find the courſe of exchange is the ſame, whether the gold in bars be imported or exported.

LONDON AND HAMBURGH.

Silver in Bars imported.

Required the price in London of an ounce ſtandard of ſilver in bars, bought at Hamburgh at 27 marcs 12 ſhillings banco per marc fine, the courſe of exchange of Hamburgh on London being at 33 11.

EQUATION.

1 ounce ſtandard = x
40 ounces ſtandard = 37 ounces fine
451 ounces of England = 60 marcs of Hamburgh
1 marc fine = $27\frac{3}{4}$ marcs banco
3 marcs banco = 8 ſhillings Flemiſh
$33\frac{11}{12}$ ſhillings Flemiſh = 240 pence ſterling.

Standard ſilver is reduced into fine ſilver by oppoſing 40 to 37, and the reſult of the equation is in pence ſterling. The only variable numbers are the price of ſilver at Hamburgh, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

189629 fixed logarithm
Price at Hamburgh . $27\frac{3}{4}$ + 144326

333955
Courſe of exchange 33 11 — 153041

180914 = $64\frac{7}{16}$ reſult.

N. B. The charges are to be added.

LONDON AND HAMBURGH.

Silver in Bars exported.

Required the price at Hamburgh of a marc fine of ſilver in bars, bought in London at 5 ſhillings 3 pence ſterling per ounce ſtandard, the courſe of exchange of London on Hamburgh being at 34 4.

EQUATION.

1 marc fine = x
60 marcs of Hamburgh = 451 ounces of England
37 ounces fine = 40 ounces ſtandard
1 ounce ſtandard = 63 pence ſterling
240 pence ſterling = $34\frac{1}{3}$ ſhillings Flemiſh
8 ſhillings Flemiſh = 3 marcs banco.

Fine ſilver is reduced into ſtandard ſilver by oppoſing 37 to 40, and the reſult of the equation is in marcs banco. The only variable numbers are the price of ſilver in London, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

Price in London . . . 63 = 179934
Courſe of exchange . $34\frac{1}{3}$ + 153572

333506
Fixed logarithm . . . . . — 189629

143877 = $27\frac{9}{20}$ reſult.

N. B. Reduce the price of ſilver at London into pence, and add the charges.

LONDON AND HAMBURGH.

Silver in Bars.

Required the courſe of exchange between London and Hamburgh reſulting from the ſale in London, at 5 ſhillings 6½ pence ſterling, of an ounce ſtandard of ſilver in bars, bought at Hamburgh at 27 marcs 12 ſhillings banco per marc fine.

EQUATION.

1 pound ſterling = x
1 pound ſterling = 240 pence ſterling
66½ pence ſterling = 1 ounce ſtandard
40 ounces ſtandard = 37 ounces fine
451 ounces of England = 60 marcs of Hamburgh
1 marc fine = 27¾ marcs banco
3 marcs banco = 8 ſhillings Flemiſh.

Standard ſilver is reduced into fine ſilver by oppoſing 40 to 37, and the reſult of the equation is in ſhillings and grotes Flemiſh banco. The only variable numbers are the price of ſilver either at Hamburgh or in London.

SOLUTION BY LOGARITHMS.

189629 fixed logarithm
Price at Hamburgh . 27¾ + 144326

333955
Price in London . . . 66½ — 182282

151673=32 10⅓ reſult.

N. B. Reduce the price of ſilver at London into pence, and add the charges.

This operation to find the courſe of exchange is the ſame, whether the ſilver in bars be imported or exported.

LONDON AND HAMBURGH.

Spaniſh Dollars imported.

Required the price in London of an ounce of new dollars $\frac{14\frac{1}{3}}{16}$ loths fine, bought at Hamburgh at 27 marcs 8 ſhillings banco per marc fine, the courſe of exchange of Hamburgh on London being at 34 1.

EQUATION.

1 ounce of dollars = x
48 ounces of dollars = 43 ounces fine
451 ounces of England = 60 marcs of Hamburgh
1 marc fine = $27\frac{1}{2}$ marcs banco
3 marcs banco = 8 ſhillings Flemiſh
$34\frac{1}{12}$ ſhillings Flemiſh = 240 pence ſterling.

Dollar ſilver is reduced into fine ſilver by oppoſing 48 to 43, and the reſult of the equation is in pence ſterling. The only variable numbers are the price of dollars at Hamburgh, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

188238 fixed logarithm
Price at Hamburgh . $27\frac{1}{2}$ + 143933

332171
Courſe of exchange 34 1 — 153254

178917 = $61\frac{9}{16}$ reſult.

N. B. Reduce the price of dollars at London into pence, and add the charges.

LONDON AND HAMBURGH.

Spaniſh Dollars exported.

Required the price at Hamburgh of a marc fine of new dollars bought in London at 5 ſhillings 1 penny ſterling per ounce $\frac{10\frac{3}{4}}{12}$ ounces fine, the courſe of London on Hamburgh being at 34 7.

EQUATION.

1 marc fine = x
60 marcs of Hamburgh = 451 ounces of England
43 ounces fine = 48 ounces of dollars
1 ounce of dollars = 61 pence ſterling
240 pence ſterling = $34\frac{7}{12}$ ſhillings Flemiſh
8 ſhillings Flemiſh = 3 marcs banco.

Fine ſilver is reduced into dollar ſilver by oppoſing 43 to 48, and the reſult of the equation is in marcs banco. The only variable numbers are the price of dollars in London, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

Price in London . . . 61 = 178533
Courſe of exchange 34 7 + 153887

332420
Fixed logarithm . . . . — 188238

144182 = $27\frac{13}{20}$ reſult.

N. B. Reduce the price of dollars at London into pence, and add the charges.

LONDON AND HAMBURGH.

Spaniſh Dollars.

Required the courſe of exchange between London and Hamburgh reſulting from the ſale in London, at 5 ſhillings 4 pence ſterling, of an ounce of dollars $\frac{14\frac{1}{3}}{16}$ loths fine, bought at Hamburgh at 27 marcs 8 ſhillings banco per marc fine.

EQUATION.

1 pound ſterling = x
1 pound ſterling = 240 pence ſterling
64 pence ſterling = 1 ounce of dollars
48 ounces of dollars = 43 ounces fine
451 ounces of England = 60 marcs of Hamburgh
1 marc fine = 27½ marcs banco
3 marcs banco = 8 ſhillings Flemiſh.

Dollar ſilver is reduced into fine ſilver by oppoſing 48 to 43, and the reſult of the equation is in ſhillings and grotes Flemiſh banco. The only variable numbers are the price of dollars either at Hamburgh or in London.

SOLUTION BY LOGARITHMS.

188238 fixed logarithm
Price at Hamburgh . 27½ + 143933

332171
Price in London . . . . 64 — 180618

151553 = 32 9⅓ reſult.

N. B. Reduce the price of dollars at London into pence, and add the charges.

This operation to find the courſe of exchange is the ſame, whether the new dollars be imported or exported.

LONDON AND HOLLAND.

Gold in Bars imported.

Required the price in London of an ounce ſtandard of gold in bars, bought at Amſterdam at an agio of 11 per cent above 355 florins current per marc fine, the courſe of exchange of Amſterdam on London being at 36, and the agio on bank money at $4\frac{1}{2}$ per cent.

EQUATION.

1 ounce ſtandard = x
12 ounces ſtandard = 11 ounces fine
633 ounces of England = 80 marcs of Holland
1 marc fine = $394\frac{1}{20}$ florins current
$104\frac{1}{2}$ florins current = 100 florins banco
3 florins banco = 10 ſhillings Flemiſh
36 ſhillings Flemiſh = 20 ſhillings ſterling.

Standard gold is reduced into fine gold by oppoſing 12 to 11; the agio of 11 per cent on 355 florins, that is, $39\frac{1}{20}$ florins, is added to 355, and the reſult of the equation is in ſhillings ſterling. The only variable numbers are the price of gold at Amſterdam, the agio on bank money, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

288781 fixed logarithm
Price at Amſterdam $394\frac{1}{20}$ + 259555
548336
Agio on bank money $104\frac{1}{2}$ — 201912
346424
Courſe of exchange . 36 — 155630
190794 = $80\frac{9}{10}$ reſult.

N. B. The charges are to be added.

LONDON AND HOLLAND.

Gold in Bars exported.

Required the price at Amſterdam of a marc fine of gold in bars, bought in London at 3 pounds 19 ſhillings ſterling per ounce ſtandard, the courſe of exchange of London on Amſterdam being at 37 6, and the agio on bank money at $4\frac{3}{4}$ per cent.'

EQUATION.

1 marc fine = x
80 marcs of Holland = 633 ounces of England
11 ounces fine = 12 ounces ſtandard
1 ounce ſtandard = 79 ſhillings ſterling
20 ſhillings ſterling = $37\frac{1}{2}$ ſhillings Flemiſh
10 ſhillings Flemiſh = 3 florins banco
100 florins banco = $104\frac{3}{4}$ florins current.

Fine gold is reduced into ſtandard gold by oppoſing 11 to 12, and the reſult of the equation is in florins current. The only variable numbers are the price of gold in London, the courſe of exchange, and the agio on bank money.

SOLUTION BY LOGARITHMS.

Price in London . . . 79 = 189763
Courſe of exchange . $37\frac{1}{2}$ + 157403
Agio on bank money $104\frac{3}{4}$ + 202015

549181
Fixed logarithm . . . . — 288781

260400 = $401\frac{3}{4}$ reſult.

N. B. Reduce the price of gold at London into ſhillings, and add the charges.

The difference between $401\frac{3}{4}$ florins current, amount of the reſult, and 355 florins current, price fixed by the law, being $46\frac{3}{4}$, in order to calculate the agio above 355, ſtate the following proportion,

$355 : 46\frac{3}{4} :: 100 : 13\frac{12}{71}$ reſult.

LONDON AND HOLLAND.

Gold in Bars.

Required the courſe of exchange between London and Amſterdam reſulting from the ſale in London, at 4 pounds 1 ſhilling ſterling, of an ounce ſtandard of gold in bars, bought at Amſterdam at the agio of 11 per cent above 355 florins current per marc fine, the agio on bank money being at 5 per cent at the latter place.

EQUATION.

1 pound ſterling = x
1 pound ſterling = 20 ſhillings ſterling
81 ſhillings ſterling = 1 ounce ſtandard
12 ounces ſtandard = 11 ounces fine
633 ounces of England = 80 marcs of Holland
1 marc fine = $394\frac{1}{20}$ florins current
105 florins current = 100 florins banco
3 florins banco = 10 ſhillings Flemiſh.

Standard gold is reduced into fine gold by oppoſing 12 to 11; the agio of 11 per cent on 355 florins, that is, $39\frac{1}{20}$ florins, is added to 355, and the reſult of the equation is in ſhillings and grotes Flemiſh banco. The only variable numbers are the price of gold either at Amſterdam or in London, and the agio on bank money.

SOLUTION BY LOGARITHMS.

288781 fixed logarithm
Price at Amſterdam $394\frac{1}{20}$ + 259555

548336
Price in London . . . 81 — 190849

357487
Agio on bank money 105 — 202119

155368 = 35 $9\frac{1}{2}$ reſult.

N. B. Reduce the price of gold at London into ſhillings, and add the charges.

This operation to find the courſe of exchange is the ſame, whether the gold in bars be imported or exported.

LONDON AND HOLLAND.

Silver in Bars imported.

Required the price in London of an ounce ſtandard of ſilver in bars, bought at Amſterdam at 25 florins 3 ſtivers current per marc fine, the courſe of exchange of Amſterdam on London being at 36 4, and the agio on bank money at $4\frac{3}{4}$ per cent.

EQUATION.

1 ounce ſtandard = x
40 ounces ſtandard = 37 ounces fine
633 ounces of England = 80 marcs of Holland
1 marc fine = $25\frac{3}{20}$ florins current
$104\frac{3}{4}$ florins current = 100 florins banco
3 florins banco = 10 ſhillings Flemiſh
$36\frac{1}{3}$ ſhillings Flemiſh = 240 pence ſterling.

Standard ſilver is reduced into fine ſilver by oppoſing 40 to 37, and the reſult of the equation is in pence ſterling. The only variable numbers are the price of ſilver at Amſterdam, the agio on bank money, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

397092 fixed logarithm
Price at Amſterdam $25\frac{3}{20}$ + 140054

537146
Agio on bank money $104\frac{3}{4}$ — 202015

335131
Courſe of exchange 36 4 — 156031

179100 = $61\frac{13}{16}$ reſult.

N. B. The charges are to be added.

LONDON AND HOLLAND.

Silver in Bars exported.

Required the price at Amſterdam of a marc fine of ſilver in bars, bought at London at 5 ſhillings 3 pence ſterling per ounce ſtandard, the courſe of exchange of London on Amſterdam being at 37 2, and the agio on bank money at 4¾.

EQUATION.

1 marc fine = x
80 marcs of Holland = 633 ounces of England
37 ounces fine = 40 ounces ſtandard
1 ounce ſtandard = 63 pence ſterling
240 pence ſterling = 37⅙ ſhillings Flemiſh
10 ſhillings Flemiſh = 3 florins banco
100 florins banco = 104¾ florins current.

Fine ſilver is reduced into ſtandard ſilver by oppoſing 37 to 40, and the reſult of the equation is in florins and ſtivers current. The only variable numbers are the price of ſilver in London, the courſe of exchange, and the agio on bank money.

SOLUTION BY LOGARITHMS.

Price in London . . . 63 = 179934
Courſe of exchange . 37⅙ + 157015
Agio on bank money 104¾ + 202015

538964
Fixed logarithm . . . . — 397092

141872=25 12½ reſult.

N. B. Reduce the price of ſilver at London into pence, and add the charges.

LONDON AND HOLLAND.

Silver in Bars.

Required the courſe of exchange between London and Amſterdam reſulting from the ſale in London, at 5 ſhillings 5½ pence ſterling, of an ounce ſtandard of ſilver in bars, bought at Amſterdam at 25 florins 15 ſtivers current per marc fine, the agio on bank money being at 5 per cent at the latter place.

EQUATION.

1 pound ſterling = x.
1 pound ſterling = 240 pence ſterling
65½ pence ſterling = 1 ounce ſtandard
40 ounces ſtandard = 37 ounces fine
633 ounces of England = 80 marcs of Holland
1 marc fine = 25¾ florins current
105 florins current = 100 florins banco
3 florins banco = 10 ſhillings Flemiſh.

Standard ſilver is reduced into fine ſilver by oppoſing 40 to 37, and the reſult of the equation is in ſhillings Flemiſh banco. The only variable numbers are the price of ſilver either at Amſterdam or in London, and the agio on bank money.

SOLUTION BY LOGARITHMS.

397092 fixed logarithm
Price at Amſterdam . 25¾ + 141078
538170
Price in London . . . 65½ — 181624
356546
Agio on bank money 105 — 202119
154427 = 35 reſult.

N. B. Reduce the price of ſilver at London into pence, and add the charges.

This operation to find the courſe of exchange is the ſame, whether the ſilver in bars be imported or exported.

LONDON AND HOLLAND.

Spaniſh Dollars imported.

Required the price in London of an ounce of new dollars, bought at Amſterdam at 51½ ſtivers current per dollar, the courſe of exchange of Amſterdam on London being at 36 1, and the agio on bank money at 4½ per cent.

EQUATION.

1 ounce = x
865 ounces = 1000 dollars
1 dollar = 51½ ſtivers current
20 ſtivers current = 1 florin current
104½ florins current = 100 florins banco
3 florins banco = 10 ſhillings Flemiſh
36$\frac{1}{12}$ ſhillings Flemiſh = 240 pence ſterling.

The reſult of this equation is in pence ſterling, and the only variable numbers are the price of a dollar at Amſterdam, the agio on bank money, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

366504 fixed logarithm
Price at Amſterdam . 51½ + 171181
537685
Agio on bank money 104½ — 201912
335773
Courſe of exchange 36 1 — 155731
180042 = 63$\frac{5}{32}$ reſult.

N. B. The charges are to be added.

LONDON AND HOLLAND.

Spaniſh Dollars exported.

Required the price at Amſterdam of new dollars bought in London at 5 ſhillings 2 pence ſterling per ounce, the courſe of exchange of London on Amſterdam being at 36 9, and the agio on bank money at 4¾ per cent.

EQUATION.

1 dollar = x
1000 dollars = 865 ounces
1 ounce = 62 pence ſterling
240 pence ſterling = 36¾ ſhillings Flemiſh
10 ſhillings Flemiſh = 3 florins banco
100 florins banco = 104¾ florins current
1 florin current = 20 ſtivers current.

The reſult of this equation is in ſtivers and penings current, and the only variable numbers are the price of dollars in London, the courſe of exchange, and the agio on bank money.

SOLUTION BY LOGARITHMS.

Price in London . . . 62 = 179239
Courſe of exchange . 36¾ + 156526
Agio on bank money 104¾ + 202015
537780
Fixed logarithm . . . . — 366504
171276 = 51 10 reſult.

N. B. Reduce the price of dollars at London into pence, and add the charges.

LONDON AND HOLLAND.

Spaniſh Dollars.

Required the courſe of exchange between London and Amſterdam reſulting from the ſale in London, at 5 ſhillings 6 pence ſterling, of an ounce of new dollars, bought at Amſterdam at $52\frac{1}{2}$ ſtivers current per dollar, the courſe of exchange of Amſterdam on London being at 35 10, and the agio on bank money at 5 per cent.

EQUATION.

1 pound ſterling = x
1 pound ſterling = 240 pence ſterling
66 pence ſterling = 1 ounce
865 ounces = 1000 dollars
1 dollar = $52\frac{1}{2}$ ſtivers current
20 ſtivers current = 1 florin current
105 florins current = 100 florins banco
3 florins banco = 10 ſhillings Flemiſh.

The reſult of this equation is in ſhillings and grotes Flemiſh banco, and the only variable numbers are the price of dollars either in London or at Amſterdam, and the agio on bank money.

SOLUTION BY LOGARITHMS.

366504 fixed logarithm
Price at Amſterdam . $52\frac{1}{2}$ + 172016
538520
Price in London . . . . 66 — 181954
356566
Agio on bank money 105 — 202119
154447 = 35 $0\frac{2}{5}$ reſult.

N. B. Reduce the price of dollars at London into pence, and add the charges.

This operation to find the courſe of exchange is the ſame, whether the new dollars be imported or exported.

LONDON AND PORTUGAL.

Gold in Bars.

Required the price in London of an ounce ſtandard of gold in bars, bought at Liſbon at 1680 reis legal money per outava $\frac{22}{24}$ carats fine, the courſe of exchange of Liſbon on London being at 62.

EQUATION.

1 ounce ſtandard = x
369 ounces of England = 50 marcs of Portugal
1 marc = 64 outavas
1 outava = 1680 reis
1000 reis = 62 pence ſterling
12 pence ſterling = 1 ſhilling ſterling.

The ſtandard of gold in bars is the ſame, and the reſult of the equation is in ſhillings ſterling. The only variable numbers are the price of gold at Liſbon, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

Price at Liſbon . . . 1680 = 322531
Courſe of exchange 62 + 179239

501770
Fixed logarithm . . . . — 314106

187664 = $75\frac{9}{32}$ reſult.

N. B. The charges are to be added.

LONDON AND PORTUGAL.

Gold in Bars.

Required the courſe of exchange between London and Liſbon reſulting from the ſale in London, at 3 pounds 19 ſhillings 6 pence ſterling, of an ounce ſtandard of gold in bars, bought at Liſbon at 1695 reis legal money per outava $\frac{22}{24}$ carats fine.

EQUATION.

1000 reis = x
1695 reis = 1 outava
64 outavas = 1 marc
50 marcs of Portugal = 369 ounces of England
1 ounce ſtandard = 79½ ſhillings ſterling
20 ſhillings = 240 pence.

The ſtandard of gold in bars is the ſame, and the reſult of the equation is in pence ſterling. The only variable numbers are the price of gold either in London or at Liſbon.

SOLUTION BY LOGARITHMS.

314106 fixed logarithm
Price in London . . . 79½ + 190037

504143
Price at Liſbon . . . 1695 — 322917

181226 = 64$\frac{22}{32}$ reſult.

N. B. Reduce the price of gold at London into ſhillings, and deduct the charges.

LONDON AND PORTUGAL.

Silver in Bars.

Required the price in London of an ounce ſtandard of ſilver in bars, bought at Liſbon at 990 reis legal money per ounce fine, the courſe of exchange of Liſbon on London being at 62$\frac{1}{2}$.

EQUATION.

1 ounce ſtandard = x
40 ounces ſtandard = 37 ounces fine
369 ounces of England = 400 ounces of Portugal
1 ounce fine = 990 reis
1000 reis = 62$\frac{1}{2}$ pence ſterling.

Standard ſilver is reduced into fine ſilver by oppoſing 40 to 37, and the reſult of the equation is in pence ſterling. The only variable numbers are the price of ſilver at Liſbon, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

Price at Liſbon . . . 990 = 299564
Courſe of exchange . 62$\frac{1}{2}$ + 179588
479152
Fixed logarithm . . . . — 299883
179269 = 62$\frac{1}{24}$ reſult.

N. B. The charges are to be added.

LONDON AND PORTUGAL.

Silver in Bars.

Required the courſe of exchange between London and Liſbon reſulting from the ſale in London, at 5 ſhillings 6½ pence ſterling, of an ounce ſtandard of ſilver in bars, bought at Liſbon at 995 reis legal money per ounce fine.

EQUATION.

1000 reis = x
995 reis = 1 ounce fine
400 ounces of Portugal = 369 ounces of England
37 ounces fine = 40 ounces ſtandard
1 ounce ſtandard = 66½ pence ſterling.

Fine ſilver is reduced into ſtandard ſilver by oppoſing 37 to 40, and the reſult of the equation is in pence ſterling. The only variable numbers are the price of ſilver either in London or at Liſbon.

SOLUTION BY LOGARITHMS.

299883 fixed logarithm
Price in London . . . 66½ + 182282
482165
Price at Liſbon . . . 995 — 299782
182383 = $66\frac{21}{32}$ reſult.

N. B. Reduce the price of ſilver at London into pence, and deduct the charges.

LONDON AND PORTUGAL.

Gold Coin of Portugal.

Required the price in London of an ounce of Joaneſe, remitted from Liſbon while the courſe of exchange on London is at $62\frac{1}{4}$, and the diſcount upon paper money at $10\frac{1}{2}$ per cent.

EQUATION.

1 ounce = x
$184\frac{1}{4}$ ounces of England = 400 Joaneſe
1 Joaneſe = 6400 reis effective money
$94\frac{3}{4}$ reis effective money = 100 reis legal money
1000 reis legal money = $62\frac{1}{4}$ pence ſterling
12 pence ſterling = 1 ſhilling ſterling.

Liſbon receives 1000 reis *legal money* for $62\frac{1}{4}$ pence ſterling which it draws; but as a Joaneſe is worth 6400 reis in *effective money*, the diſcount which obtains upon paper money ſhould be allowed upon one half of the ſum remitted, which is tantamount to oppoſing $94\frac{3}{4}$ to 100, that is, to deducting one half of the diſcount upon the whole ſum. The reſult of the equation is in ſhillings ſterling, and the only variable numbers are the courſe of exchange, and the amount of the diſcount at Liſbon.

SOLUTION BY LOGARITHMS.

206365 fixed logarithm
Courſe of exchange . . . $62\frac{1}{4}$ + 179414

385779
100, leſs half the diſcount $94\frac{3}{4}$ — 197658

188121 = $76\frac{1}{16}$ reſult.

N. B. Subtract the logarithm of 100, leſs half the diſcount, and add the charges.

LONDON AND PORTUGAL.

Gold Coin of Portugal.

Required the courſe of exchange between London and Liſbon reſulting from the ſale in London, at 3 pounds 19 ſhillings 3 pence ſterling, of an ounce of Joaneſe remitted from Liſbon while the diſcount upon paper money at Liſbon is at $11\frac{1}{4}$ per cent.

EQUATION.

1000 reis legal money = x
100 reis legal money = $94\frac{3}{8}$ reis effective money
6400 reis effective money = 1 Joaneſe
400 Joaneſe = $184\frac{1}{4}$ ounces of England
1 ounce = $79\frac{1}{4}$ ſhillings ſterling
1 ſhilling ſterling = 12 pence ſterling.

The certain price of the exchange between London and Liſbon being in reis *legal money*, it follows that half the diſcount upon 6400 reis *effective money*, or the value of a Joaneſe, ſhould be allowed, which is tantamount to oppoſing 100 to $94\frac{3}{8}$. The reſult of the equation is in pence ſterling, and the only variable numbers are the price of Joaneſe in London, and the amount of the diſcount at Liſbon.

SOLUTION BY LOGARITHMS.

Price in London . . . . . $79\frac{1}{4}$ = 189900
100, leſs half the diſcount $94\frac{3}{8}$ + 197486

387386
Fixed logarithm . . . . — 206365

181021 = $64\frac{19}{32}$ reſult.

N. B. Reduce the price of Joaneſe at London into ſhillings, add the logarithm of 100, leſs half the diſcount, and deduct the charges.

LONDON AND PORTUGAL.

Spaniſh Dollars.

Required the price in London of an ounce of new dollars bought at Liſbon at 850 reis legal money per dollar, the courſe of exchange of Liſbon on London being at $62\frac{5}{8}$.

EQUATION.

1 ounce = x
865 ounces = 1000 dollars
1 dollar = 850 reis
1000 reis = $62\frac{5}{8}$ pence.

The reſult of the equation is in pence ſterling, and the only variable numbers are the price of dollars at Liſbon, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

Price at Liſbon . . . 850 = 292942
Courſe of exchange . $62\frac{5}{8}$ + 179675
——————
472617
Fixed logarithm . . . . . — 293702
——————
178915 = $61\frac{1}{2}\frac{3}{4}$ reſult.

N. B. The charges are to be added.

LONDON AND PORTUGAL.

Spaniſh Dollars.

Required the courſe of exchange between London and Liſbon reſulting from the ſale in London, at 5 ſhillings 5 pence ſterling, of an ounce of new dollars, bought at Liſbon at 840 reis legal money per dollar.

EQUATION.

1000 reis = x
840 reis = 1 dollar
1000 dollars = 865 ounces
1 ounce = 65 pence.

The reſult of the equation is in pence ſterling, and the only variable numbers are the price of dollars either in London or at Liſbon.

SOLUTION BY LOGARITHMS.

293702 fixed logarithm
Price in London . . . . 65 + 181291

474993
Price at Liſbon . . . . 840 — 292428

182565 = $66\frac{15}{16}$ reſult.

N. B. Reduce the price of dollars at London into pence, and deduct the charges.

LONDON AND SPAIN.

Gold in Bars.

Required the price in London of an ounce ſtandard of gold in bars, bought at Cadiz at 29½ reals of plate per caſtellano $\frac{22\frac{1}{2}}{24}$ carats fine, the courſe of exchange of Cadiz on London being at 36¼.

EQUATION.

1 ounce ſtandard = x
37 ounces of England = 250 caſtellanos of Spain
45 caſtellanos $\frac{44}{48}$ fine = 44 caſtellanos $\frac{45}{48}$ fine
1 caſtellano $\frac{45}{48}$ fine = 29½ reals of plate
8 reals of plate = 36¼ pence ſterling
12 pence ſterling = 1 ſhilling ſterling.

Standard gold is reduced into caſtellano gold by opposing 45 to 44, and the reſult of the equation is in ſhillings ſterling. The only variable numbers are the price of gold at Cadiz, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

Price at Cadiz . . . . . 29½ = 146982
Courſe of exchange . 36¼ + 155931

302913
Fixed logarithm . . . . — 116229

186684 = 73$\frac{19}{32}$ reſult.

N. B. The charges are to be added.

LONDON AND SPAIN.

Gold in Bars.

Required the courſe of exchange between London and Cadiz reſulting from the ſale in London, at 4 pounds 6 pence ſterling, of an ounce ſtandard of gold in bars, bought at Cadiz at $29\frac{1}{2}$ reals of plate per caſtellano $\frac{22\frac{1}{2}}{24}$ carats fine.

EQUATION.

1 dollar of exchange = x
1 dollar of exchange = 8 reals of plate
$29\frac{1}{2}$ reals of plate = 1 caſtellano $\frac{45}{48}$ fine
44 caſtellanos $\frac{45}{48}$ fine = 45 caſtellanos $\frac{44}{48}$ fine
250 caſtellanos of Spain = 37 ounces of England
1 ounce ſtandard = $80\frac{1}{2}$ ſhillings ſterling
1 ſhilling ſterling = 12 pence ſterling.

Caſtellano gold is reduced into ſtandard gold by oppoſing 44 to 45, and the reſult of the equation is in pence ſterling. The only variable numbers are the price of gold either in London or at Cadiz.

SOLUTION BY LOGARITHMS.

116229 fixed logarithm
Price in London . . . $80\frac{1}{2}$ + 190580

306809
Price at Cadiz . . . . . $29\frac{1}{2}$ — 146982

159827 = $39\frac{21}{32}$ reſult.

N. B. Reduce the price of gold at London into ſhillings, and deduct the charges.

LONDON AND SPAIN.

Silver in Bars.

Required the price in London of an ounce ſtandard of ſilver in bars, bought at Cadiz at 105 reals of plate per marc fine of Caſtille, the courſe of exchange of Cadiz on London being at 36¼.

EQUATION.

1 ounce ſtandard = x
40 ounces ſtandard = 37 ounces fine
37 ounces of England = 5 marcs of Caſtille
1 marc fine = 105 reals of plate
8 reals of plate = 36¼ pence ſterling.

Standard ſilver is reduced into fine ſilver by oppoſing 40 to 37, and the reſult of the equation is in pence ſterling. The only variable numbers are the price of ſilver at Cadiz, and the courſe of exchange.

SOLUTION BY LOGARITHMS.

Price at Cadiz . . . . 105 = 202119
Courſe of exchange . 36¼ + 155931

358050
Fixed logarithm . . . . . — 180618

177432 = $59\frac{15}{32}$ reſult.

N. B. The charges are to be added.

LONDON AND SPAIN.

Silver in Bars.

Required the courſe of exchange between London and Cadiz reſulting from the ſale in London, at 5 ſhillings 5 pence ſterling, of an ounce ſtandard of ſilver in bars, bought at Cadiz at 106 reals of plate per marc fine of Caſtille.

EQUATION.

1 dollar of exchange = x
1 dollar of exchange = 8 reals of plate
106 reals of plate = 1 marc fine
5 marcs of Caſtille = 37 ounces of England
37 ounces fine = 40 ounces ſtandard
1 ounce ſtandard = 65 pence ſterling.

Fine ſilver is reduced into ſtandard ſilver by oppoſing 37 to 40, and the reſult of the equation is in pence ſterling. The only variable numbers are the price of ſilver either in London or at Cadiz.

SOLUTION BY LOGARITHMS.

180618 fixed logarithm
Price in London . . . 65 + 181291

361909
Price at Cadiz . . . 106 — 202531

159378 = 39¼ reſult.

N. B. Reduce the price of ſilver at London into pence, and deduct the charges.

LONDON AND SPAIN.

New Doubloons.

Required the price in London of an ounce of doubloons remitted from Cadiz, the courſe of exchange of Cadiz on Liſbon being at $36\frac{1}{4}$.

EQUATION.

1 ounce = x
$866\frac{1}{2}$ ounces = 1000 doubloons
1 doubloon = 170 reals of plate
8 reals of plate = $36\frac{1}{4}$ pence ſterling
12 pence ſterling = 1 ſhilling ſterling.

The reſult of the equation is in ſhillings ſterling, and the only variable number is the courſe of exchange.

SOLUTION BY LOGARITHMS.

31041 fixed logarithm
Courſe of exchange . $36\frac{1}{4}$ + 155931

186972 = $74\frac{1}{12}$ reſult.

N. B. The charges are to be added.

LONDON AND SPAIN.

New Doubloons.

Required the courſe of exchange between London and Cadiz reſulting from the ſale in London, at 3 pounds 18 ſhillings 6 pence ſterling, of an ounce of new doubloons remitted from Cadiz.

EQUATION.

1 dollar of exchange = x
1 dollar of exchange = 8 reals of plate
170 reals of plate = 1 doubloon
1000 doubloons = $866\frac{1}{2}$ ounces
1 ounce = $78\frac{1}{2}$ ſhillings
1 ſhilling = 12 pence.

The reſult of the equation is in pence ſterling, and the only variable number is the price of new doubloons in London.

SOLUTION BY LOGARITHMS.

Price in London . . . $78\frac{1}{2}$ = 189487
Fixed logarithm . . . . — 31041

158446 = $38\frac{5}{12}$ reſult.

N. B. Reduce the price of doubloons at London into ſhillings, and deduct the charges.

LONDON AND SPAIN.

New Dollars.

Required the price in London of an ounce of hard dollars, quite new, remitted from Cadiz, the courſe of exchange of Cadiz on London being at 36⅛.

EQUATION.

1 ounce = x
866¼ ounces = 1000 hard dollars
64 hard dollars = 85 dollars of exchange
1 dollar of exchange = 36⅛ pence ſterling.

The reſult of the equation is in pence ſterling, and the only variable number is the courſe of exchange.

SOLUTION BY LOGARITHMS.

18560 fixed logarithm
Courſe of exchange . 36⅛ + 155781

174341 = 55⅜ reſult.

N. B. The charges are to be added.

In reſpect to dollars which have been circulated, the fixed logarithm to be employed is 18622, as 1000 dollars only render, in general, 865 ounces.

LONDON AND SPAIN.

New Dollars.

Required the courſe of exchange between London and Cadiz reſulting from the ſale in London, at 5 ſhillings $3\frac{1}{2}$ pence ſterling, of an ounce of hard dollars, quite new, remitted from Cadiz.

EQUATION.

1 dollar of exch. = x
85 dollars of exch. = 64 hard dollars
1000 hard dollars = $866\frac{1}{4}$ ounces
1 ounce = $63\frac{1}{2}$ pence.

The reſult of the equation is in pence ſterling, and the only variable number is the price of dollars in London.

SOLUTION BY LOGARITHMS.

Price in London . . . . $63\frac{1}{2}$ = 180277
Fixed logarithm . . . . — 18560

161717 = $41\frac{5}{12}$ reſult.

N. B. Reduce the price of new dollars at London into pence, and deduct the charges.

In reſpect to dollars which have been circulated, the fixed logarithm to be employed is 18622, as 1000 dollars only render, in general, 865 ounces.

OF

PARS OF EXCHANGE,

AND

OF COINS.

OF PARS OF EXCHANGE, AND OF COINS.

SPEAKING of Exchange Operations, page 25 of the firſt volume, I referred to two pars of exchange, which I diſtinguiſhed by the reſpective appellations of intrinſic and eventual. The analyſis and manner of calculating each are the ſubjects which I now propoſe to conſider. I ſhall, then, determine the intrinſic par of exchange between London and the ſeveral places with which we have an exchange open; and the rules of calculation which I ſhall give, the operations which will be deſcribed, together with the tables of comparison of gold and ſilver coins, inſerted in a ſubſequent part of this work, will afford the means of determining the pars of exchange between London and thoſe places with which not any courſe of exchange is eſtabliſhed.

OF INTRINSIC PAR.

The expreſſion of *intrinſic par* is intended to convey an idea, in general, of a mean par between two intrinſic pars, reſulting from a compariſon of the gold and ſilver coins reſpectively of one ſtate with thoſe of another ſtate. Hence it is that writers upon Commercial Economy, conſidering the intrinſic par between England and France, according to the antient method of quoting the exchange, agreed in deeming 60 ſols tournois as the counter-value, or par, for 29 pence ſterling, being a mean term between the par of 60 ſols oppoſed to 30 pence, and reſulting from the compariſon of the gold coins of the two countries; and the par of 60 ſols oppoſed to 28 pence, and reſulting from a ſimilar compariſon of their ſilver coins.

Some of the writers alluded to have conſidered the mean par as an acceſſory of mere curioſity, while others have attached to it a conſiderable degree of importance; and, indeed, it would ſeem that the latter opinion has prevailed, ſince there are publications at Altona, and at London, of tables of arbitrations calculated with reference to the conſideration of exchanges as above or below par.

Let us therefore examine whether the intrinſic or real par of monies be of that importance in exchanges which is attributed to it.

Two quantities of money of different countries are at par, when they are of that reciprocal equivalence as to be mutually exchangeable, either abſtractedly from any inequality in thoſe circumſtances relative to each which might affect the conditions of an exchange, or in ſuppoſing ſuch circumſtances to be perfectly and reciprocally equal, and mutually known and admitted. Such par, therefore, or abſolute equivalence, conſidered in the abſtract, would exiſt between two like quantities of the ſame metal; each being virtually ſeparated from the value of any alloy, which is always deemed negative.

Under this point of view, there are, therefore, two intrinſic pars in reſpect to the monies of two countries; that of the monies of gold of the one as oppoſed to the monies of gold of the other, and that of their reſpective monies of ſilver.

But, as the relation between the value of theſe metals is almoſt every where different, being a matter of local regulation of governments in reſpect to the coinage adopted by each, and as the general courſe of commerce effects frequent alterations in the value of gold and ſilver in reſpect to each other, we may conclude that a mean intrinſic par cannot, of neceſſity, be correct, and that, as it is founded upon circumſtances perpetually changing, or ſuſceptible of change, it cannot have any exiſtence in reality, whether it be ſuppoſed that the monies compared be compoſed of like quantities of the two metals, or that the ſame par be the reſult of a compariſon of monies having different proportions.

In fact, if we conſider that the objects of compariſon are two, of a different nature, and conſequently diſtinct from each other, we ſhall be convinced that the pars to be diſtinguiſhed are two, and not more.

It is known that gold and ſilver derive their principal value from their ſcarcity, and from the price of a greater or leſs degree of labour and of time employed in extracting them from the earth. Thus, as their value is relative to the coincidence of ſeveral elements, each naturally variable, it follows that ſuch value is not reducible to any conſtant relation; and, therefore, that a natural equivalence between theſe metals cannot be determined, any more than a ſimilar equivalence between different articles of merchandize.

In certain countries, ſuch as Portugal and England, the payments of commerce are generally made in gold coins; while in other countries, ſuch as Spain and France, ſimilar payments are made almoſt excluſively in ſilver coins. The par of exchange between Portugal and England cannot, therefore, be properly conſidered but in reſpect to the gold coins of thoſe countries, while the par between Spain and France is in like manner relative to their ſilver currency.

In France, and in reſpect to the exchange with England, the par of exchange can only be appreciated by conſidering as merchandize the gold which the latter pays to the former; and, reciprocally, England can only conſider as merchandize the ſilver which ſhe receives from France in her commutations with that country. Hence, there is not any permanent baſis of calculation upon which may be grounded the expreſſion of a real par of monies, as relating to the exchange between theſe two nations.

Spain is to England the ſource of its ſilver coinage; and, if the inequality of the circumſtances which determine the meaſure of their exchanges be ſuch, that the greater or leſs degree of abundance of ſilver is inherent in one of thoſe countries, while the degree of occaſion for the ſame metal is in like manner inherent in the other; if theſe circumſtances, which are inſeparable from the reſpective poſition of each, have a conſtant tendency to the ſame effect reciprocally, how can we conceive, according to the caſe itſelf, a real par of exchange, abſtracted from the influence of the circumſtances in queſtion upon the identical objects of compariſon?

The compariſon of the quantity of fine ſilver contained in a Spaniſh hard dollar with that which is contained in our crown-piece, eſtabliſhes the intrinſic par of the dollar of exchange at 39,22 pence ſterling.

However, by a neceſſary conſequence of the circumſtances of which I have juſt ſpoken, the dollar of exchange uniformly finds its level in the commerce between the two countries, in a price exceeded by the par in queſtion by as much as is the aggregate amount of the duties levied by the King of Spain upon the exportation of dollars; of the freight; the inſurance againſt all the riſks to which they may be expoſed; the charges of conveyance to the capital after their arrival in England; the wear to which they are ſubject by the colliſion; the intereſt of the funds employed from the time of the tranſmiſſion to that of the ſale; the commiſſion and other banking charges; and, further, the profit which accrues, with few exceptions, to the perſon with whom the ſpeculation originates. Hence we muſt infer, that the par of exchange between theſe two countries, ſuch as might be denominated with propriety a real par, or that which would, in fact, expreſs the natural and abſolute equivalence of a quantity of ſilver money in England to a quantity of money of the ſame metal in Spain, muſt be greater than the intrinſic par by the difference of the whole of ſuch expences; that the ſilver itſelf, traced from its ſource to the period when it has reached its deſtination, has in reality acquired an augmentation of value; and, laſtly, that there is a difference of about 11 per cent, being the amount of the charges enumerated above, between the value of an ounce of fine ſilver at Cadiz, and that of an ounce of fine ſilver at London.

The principles which we have juſt analyſed are equally applicable to the conſideration of the intrinſic par between Portugal and England, as ariſing from the commerce between the two countries, and by which the latter is ſupplied with the materials for its gold coinage.

Again: conſidering that the intrinſic par is not of that practical applicability to the operations of commerce to be at any time the baſis of ſpeculations; that authors vary in the pars which they have given; and that thoſe admitted in buſineſs are almoſt all incorrect; I ſhall conclude, without enlarging upon any imaginary notions which may have been formed of the mean intrinſic par, that it is from error alone that it can have derived its importance as the fancied expreſſion of the moſt exact relative value of the monies of two countries; and that, as the par of exchange is not the ſame when conſidered in reſpect to the monies of gold, as when it is conſidered in reſpect to the monies of ſilver, the diſtinction ſhould be therefore preſerved.

OF THE CALCULATION OF THE INTRINSIC PAR.

The intrinſic par is in general calculated by a compariſon of the pure contents of two coins of the ſame metal, appertaining to different countries; and by a compariſon of the value at which each is reſpectively admitted in circulation, in conſequence of regulations by government.

The following propoſition will ſerve to ſhew the method of aſcertaining the weight, the ſtandard, and the pure contents of any foreign coin, in order to determine the par of exchange between two countries, according to the pure contents of the ſame coin comparatively with the pure contents of a coin of another country, and according to the current value of each.

PROPOSITION.

Required to know the weight and ſtandard, by the Engliſh computation, as well as the pure contents, of a piece of gold of France of 40 francs.

To find the Weight.

Obſerving that the piece in queſtion weighs 12,90 grammes of France, each of which is equivalent to 18,83 grains of France, and that 7021 grains of France correſpond with 5760 grains of England, I ſhall determine the Engliſh weight of the piece of 40 francs by the following equation :

1 piece = 199,25 grains
1 piece = 12,90 grammes
1 gramme = 18,83 grains
7021 grains French = 5760 grains Engliſh.

To find the Standard.

I have now to aſcertain the Engliſh ſtandard of the ſame piece of gold of 40 francs, which contains nine parts of fine and one part of alloy; that is, wiſhing to know by how many carat-grains it may be better or worſe than the Engliſh ſtandard, I ſhall ſtate the following proportion :

$$10 : 9 :: 96 \text{ carat-grains} : x,$$

and the reſult, which is $86\frac{2}{5}$, denotes that the ſtandard of the piece above mentioned is $1\frac{3}{5}$ carat-grains worſe than the ſtandard of regulation, which is 88 carat-grains.

To find the pure Contents.

Having aſcertained by the firſt equation that the piece in queſtion weighs 199,25 grains troy-weight, I ſeek its pure contents, either according to the French ſtandard, by the following proportion,

$$10 : 9 :: 199{,}25 \text{ grains} : x,$$

or, according to the Engliſh ſtandard, by the under mentioned,

$$96 : 86\tfrac{2}{5} :: 199{,}25 \text{ grains} : x;$$

and the reſult of each of theſe proportions, being neceſſarily alike, denotes that the piece contains 179,32 grains of pure metal, Engliſh weight.

After having aſcertained the pure contents of this piece of 40 francs, and knowing that the pure contents of the guinea amount to 118,65 grains, I determine the par of exchange by the following equation, comprehending the current value of the two pieces reſpectively, and in which the firſt term of the dividend is the certain price of the exchange.

1 pound ſterling = x
1 pound ſterling = 20 ſhillings
21 ſhillings = 1 guinea
1 guinea = 118,65 grains fine
179,32 grains fine = 40 franc piece.

The iſſue denotes that the par of exchange between France and England, reſulting from a compariſon of their reſpective gold coins, is 25,21; that is, that a pound ſterling is equal to 25 francs 21 cents.

The intrinſic par may be alſo calculated by firſt determining the par of coins between two different countries; that is, the value, in the money of one country, of a piece of another country. The following examples will denote the method to be followed.

TO FIND THE PAR OF COINS.

FIRST EXAMPLE.

Required to know the value in ſterling of the meya dobra or Joaneſe of Portugal, weighing $221\frac{7}{8}$ grains troy-weight, and being of the ſtandard of 22 carats, by compariſon with the guinea, which is alſo of that ſtandard, but of which the weight is of $129\frac{7}{16}$ grains.

EQUATION.

1 Joaneſe = 36 ſhillings
1 Joaneſe = $221\frac{7}{8}$ grains
$129\frac{7}{16}$ grains = 1 guinea
1 guinea = 21 ſhillings.

SECOND EXAMPLE.

What is the value in ſterling of a ducat of Hamburgh or of Holland, of the ſtandard of $23\frac{1}{2}$ carats, and the weight of which is equal to $53\frac{17}{20}$ grains troy-weight, by compariſon with the guinea of the ſtandard of 22 carats, and the weight of which is equal to $129\frac{7}{16}$ grains.

EQUATION.

1 ducat = 9 ſhill. 4 pence
1 ducat = $53\frac{17}{20}$ grains $\frac{47}{48}$ fine
44 grains $\frac{47}{48}$ fine = 47 grains $\frac{44}{48}$ fine
$129\frac{7}{16}$ grains $\frac{44}{48}$ fine = 1 guinea
1 guinea = 21 ſhillings.

Whence it follows, that, to find the par of coins, it is requiſite to place the piece of which the value be ſought, as the firſt term in the dividend of an equation whoſe laſt term be of the denomination of the money into which it be intended to reduce ſuch piece.

TO FIND THE PAR OF EXCHANGE.

FIRST EXAMPLE.

Required the par of exchange between London and Liſbon, the Joaneſe being worth 6400 reis and 36 ſhillings reſpectively.

EQUATION.

1000 reis = $67\frac{1}{2}$ pence
6400 reis = 36 ſhillings
1 ſhilling = 12 pence.

SECOND EXAMPLE.

Required the par of exchange between London and Hamburgh, the ducat being worth 6 marcs banco and 9 ſhillings 4 pence ſterling reſpectively.

EQUATION.

1 pound ſterl. = $34\frac{7}{24}$ ſhill. Flem. banco
1 pound = 20 ſhillings
$9\frac{1}{3}$ ſhillings = 1 ducat
1 ducat = 6 marcs banco
3 marcs = 8 ſhillings Flemiſh.

Whence it follows, that, to find the par of exchange, after having firſt determined the par of coins, it is requiſite to place the certain price of the exchange as the firſt term of the dividend in an equation whoſe laſt term be of the denomination of the uncertain price.

The two methods which I have juſt pointed out, and the tables of gold and ſilver coins which will be found in a ſubſequent part of this work, will ſerve for the determination of all ſuch pars of exchange as have not been comprehended under the preſent head, and which are determined by means of a ſingle equation, founded upon the ſucceſſive compariſon of the gold and ſilver coins, in reſpect to their weight, ſtandard, and current value.

I have now to ſpeak of the eventual par; but before I proceed to this part of my ſubject, I ſhall beg leave to point out to my readers the ſtrange error exiſting in almoſt all the tables of monies publiſhed in this country, and which is even rather generally adopted in buſineſs, namely, that 24 livres tournois are equal to 1 pound ſterling, which would induce a ſuppoſition that the *écu de ſix livres* of France were equivalent to the Engliſh crown, notwithſtanding that the weight and ſtandard of the former be inferior to thoſe of the latter; and that, according to the pars which I have determined, and of which the correctneſs may be verified, the pound ſterling would be worth 25 livres

5 ſols 10 deniers tournois, or 24 francs 98 cents, admitting the exiſtence of a mean par as the reſult of the two intrinſic pars.

OF THE EVENTUAL PAR.

The expreſſion of eventual par is intended to convey an idea of a par of exchange between two countries, which is determined by deducting from, or adding to, the intrinſic par the difference ariſing either from the diſcount obtaining upon paper money by reaſon of its forced circulation, or from the agio allowed upon effective coins in gold and ſilver, which are the elements of the formation of the intrinſic par.

The following examples will ſhew the method to be followed in order to find the eventual par.

FIRST EXAMPLE.

The intrinſic par between London and Liſbon which reſults from the compariſon of the monies of gold being $67\frac{1}{2}$, what is the eventual par between thoſe places, while the diſcount is at 12 per cent upon paper money at Liſbon?

SOLUTION.

As payments are made, in Portugal, half in caſh, and half in paper money, it is evident that, to find the eventual par, the intrinſic par is to be reduced by only half the diſcount upon paper money; wherefore

100 reis legal : 94 reis effective :: $67\frac{1}{2}$ pence : x,
reſult $63\frac{9}{20}$ pence.

SECOND EXAMPLE.

What is the eventual par between London and Venice, when the intrinſic par reſulting from the compariſon of the monies of gold is 46,28 lire piccoli per pound ſterling, and the agio on zecchins at 35 per cent at Venice?

SOLUTION.

The intrinſic par being determined according to the value of the zecchins, fixed at 22 lire piccoli, it is evident, that, if an agio be paid of 35 per cent upon the value of the zecchin, it becomes requiſite, in order to obtain the eventual par, to add to the value of the intrinſic par, being 46,28 lire piccoli, in the proportion of 100 to 135; wherefore

100 : 135 :: 46,28 lire piccoli : x,

reſult 62,48 lire piccoli.

According to the preſent quotation of the exchange of London upon Liſbon and Venice reſpectively, which accords pretty nearly with the reſults above mentioned, it is evident that, if the intrinſic par be the baſis of the courſe of exchange between two countries in which payments are made in effective monies, the eventual par is a ſimilar baſis, when in any two countries, or in either of them, payments are not made in effective, or only partially in effective; and, under this point of view, the inveſtigation of the eventual par becomes an object of utility.

LONDON AND AMSTERDAM.

Gold Coins.

Required the intrinſic par of exchange between London and Amſterdam, reſulting from the compariſon of the guinea and the ducat.

EQUATION.

1 pound ſterling = x
21 pounds ſterling = 20 guineas
1 guinea = $129\frac{7}{16}$ grains $\frac{44}{48}$ fine
47 grains $\frac{44}{48}$ fine = 44 grains $\frac{47}{48}$ fine
$53\frac{17}{20}$ grains $\frac{47}{48}$ fine = 1 ducat
1 ducat = $4\frac{39}{40}$ florins banco
3 florins banco = 10 ſhillings Flemiſh.

RESULT.

1 pound ſterling = 35 ſhillings $6\frac{1}{2}$ grotes Flemiſh banco, or 35,54 ſhillings Flemiſh banco.

Silver Coins.

Required the intrinſic par reſulting from the compariſon of the crown and the ducatoon.

EQUATION.

1 pound ſterling = x
1 pound ſterling = 4 crowns
1 crown = $464\frac{1}{2}$ grains $\frac{222}{240}$ fine
225 grains $\frac{222}{240}$ fine = 222 grains $\frac{225}{240}$ fine
$503\frac{1}{2}$ grains $\frac{225}{240}$ fine = 1 ducatoon
1 ducatoon = 3 florins banco
3 florins banco = 10 ſhillings Flemiſh.

RESULT.

1 pound ſterling = 36 ſhillings 5 grotes Flemiſh banco, or 36,41 ſhillings Flemiſh banco.

LONDON AND FRANCE.

Gold Coins.

Required the intrinſic par of exchange between London and France, reſulting from the compariſon of the guinea and the louis coined ſince 1785.

EQUATION.

1 pound ſterling = x
21 pounds ſterling = 20 guineas
1 guinea = $129\frac{7}{16}$ grains $\frac{66}{72}$ fine
65 grains $\frac{66}{72}$ fine = 66 grains $\frac{65}{72}$ fine
$117\frac{5}{6}$ grains $\frac{65}{72}$ fine = 1 louis
1 louis = 24 livres tournois.

RESULT.

1 pound ſterling = 25 livres 9 ſols $10\frac{2}{3}$ deniers tournois, or 25 francs 18 cents.

Silver Coins.

Required the intrinſic par reſulting from the compariſon of the Engliſh and French crowns.

EQUATION.

1 pound ſterling = x
1 pound ſterling = 4 Engliſh crowns
1 Engliſh crown = $464\frac{1}{2}$ grains $\frac{111}{120}$ fine
109 grains $\frac{111}{120}$ fine = 111 grains $\frac{109}{120}$ fine
$452\frac{1}{2}$ grains $\frac{109}{120}$ fine = 1 French crown
1 French crown = 6 livres tournois.

RESULT.

1 pound ſterling = 25 livres 1 ſol $9\frac{1}{3}$ deniers tournois, or 24 francs 78 cents.

LONDON AND FRANCE.

Gold Coins.

Required the intrinſic par of exchange between London and France, reſulting from the compariſon of the guinea and the new piece of 40 francs.

EQUATION.

1 pound ſterling = x
21 pounds ſterling = 20 guineas
1 guinea = $129\frac{7}{16}$ grains $\frac{55}{60}$ fine
54 grains $\frac{55}{60}$ fine = 55 grains $\frac{54}{60}$ fine
$199\frac{1}{4}$ grains $\frac{54}{60}$ fine = 40 franc piece.

RESULT.

1 pound ſterling = 25 francs 21 cents.

Silver Coins.

Required the intrinſic par reſulting from the compariſon of the crown and the new piece of 5 francs.

EQUATION.

1 pound ſterling = x
1 pound ſterling = 4 crowns
1 crown = $464\frac{1}{2}$ grains $\frac{37}{40}$ fine
36 grains $\frac{37}{40}$ fine = 37 grains $\frac{36}{40}$ fine
$386\frac{1}{8}$ grains $\frac{36}{40}$ fine = 5 franc piece.

RESULT.

1 pound ſterling = 24 francs 73 cents.

LONDON AND GENOA.

Gold Coins.

Required the intrinſic par of exchange between London and Genoa, reſulting from the compariſon of the guinea and the zecchin.

EQUATION.

1 pezza fuori di banco = x
1 pezza fuori di banco = $5\frac{3}{4}$ lire ditto
$13\frac{1}{2}$ lire ditto = 1 zecchin
1 zecchin = $53\frac{4}{5}$ grains $\frac{191}{192}$ fine
176 grains $\frac{191}{192}$ fine = 191 grains $\frac{176}{192}$ fine
$129\frac{7}{16}$ grains $\frac{176}{192}$ fine = 1 guinea
1 guinea = 252 pence ſterling.

RESULT.

1 pezza fuori di banco = 48,41 pence ſterling.

Silver Coins.

Required the intrinſic par reſulting from the compariſon of the crown and the genovina.

EQUATION.

1 pezza fuori di banco = x
1 pezza fuori di banco = $5\frac{3}{4}$ lire ditto
$9\frac{1}{2}$ lire ditto = 1 genovina
1 genovina = $593\frac{1}{10}$ grains $\frac{229}{240}$ fine
222 grains $\frac{229}{240}$ fine = 229 grains $\frac{222}{240}$ fine
$464\frac{1}{2}$ grains $\frac{222}{240}$ fine = 1 crown
1 crown = 60 pence ſterling.

RESULT.

1 pezza fuori di banco = 47,83 pence ſterling.

LONDON AND HAMBURGH.

Gold Coins.

Required the intrinſic par of exchange between London and Hamburgh, reſulting from the compariſon of the guinea and the ducat.

EQUATION.

1 pound ſterling = x
21 pounds ſterling = 20 guineas
1 guinea = $129\frac{7}{16}$ grains $\frac{44}{48}$ fine
47 grains $\frac{44}{48}$ fine = 44 grains $\frac{47}{48}$ fine
$53\frac{17}{20}$ grains $\frac{47}{48}$ fine = 1 ducat
1 ducat = 6 marcs banco
3 marcs banco = 8 ſhillings Flemiſh.

RESULT.

1 pound ſterling = 34 ſhillings $3\frac{1}{2}$ grotes Flemiſh banco, or 34,29 ſhillings Flemiſh banco.

Silver Coins.

Required the intrinſic par reſulting from the compariſon of the crown and the marc banco.

EQUATION.

1 pound ſterling = x
1 pound ſterling = 4 crowns
$12\frac{2}{5}$ crowns = 5328 grains fine
3608 grains fine = 1 marc fine
1 marc fine = $27\frac{5}{8}$ marcs banco
3 marcs banco = 8 ſhillings Flemiſh.

RESULT.

1 pound ſterling = 35 ſhillings 1 grote Flemiſh banco, or 35,09 ſhillings Flemiſh banco.

LONDON AND LEGHORN.

Gold Coins.

Required the intrinſic par of exchange between London and Leghorn, reſulting from the compariſon of the guinea and the ruopono.

EQUATION.

1 pezza of 8 reals = x
1 pezza of 8 reals = 5$\frac{3}{4}$ lire moneta buona
40 lire moneta buona = 1 ruopono
1 ruopono = 161$\frac{1}{3}$ grains $\frac{287}{288}$ fine
264 grains $\frac{287}{288}$ fine = 287 grains $\frac{264}{288}$ fine
129$\frac{7}{16}$ grains $\frac{264}{288}$ fine = 1 guinea
1 guinea = 252 pence.

RESULT.

1 pezza of 8 reals = 49,09 pence ſterling.

Silver Coins.

Required the intrinſic par reſulting from the compariſon of the crown and the franceſcono.

EQUATION.

1 pezza of 8 reals = x
1 pezza of 8 reals = 5$\frac{3}{4}$ lire moneta buona
6$\frac{2}{3}$ lire moneta buona = 1 franceſcono
1 franceſcono = 422$\frac{3}{4}$ grains $\frac{110}{120}$ fine
111 grains $\frac{110}{120}$ fine = 110 grains $\frac{111}{120}$ fine
464$\frac{1}{2}$ grains $\frac{111}{120}$ fine = 1 crown
1 crown = 60 pence.

RESULT.

1 pezza of 8 reals = 46,67 pence ſterling.

LONDON AND NAPLES.

Gold Coins.

Required the intrinſic par of exchange between London and Naples, reſulting from the compariſon of the guinea and the onza.

EQUATION.

1 ducat di regno = x
3 ducats di regno = 1 onza
1 onza = 68 $\frac{1}{6}$ grains $\frac{21}{24}$ fine
22 grains $\frac{21}{24}$ fine = 21 grains $\frac{22}{24}$ fine
129$\frac{7}{16}$ grains $\frac{22}{24}$ fine = 1 guinea
1 guinea = 252 pence.

RESULT.

1 ducat di regno = 42,19 pence ſterling.

Silver Coins.

Required the intrinſic par reſulting from the compariſon of the crown and the ducat di regno.

EQUATION.

1 ducat di regno = x
1 ducat di regno = 336 grains $\frac{219}{240}$ fine
222 grains $\frac{219}{240}$ fine = 219 grains $\frac{222}{240}$ fine
464$\frac{1}{2}$ grains $\frac{222}{240}$ fine = 1 crown
1 crown = 60 pence.

RESULT.

1 ducat di regno = 42,81 pence ſterling.

LONDON AND PORTUGAL.

Gold Coins.

Required the intrinſic par of exchange between London and Portugal, reſulting from the compariſon of the guinea and the Joaneſe.

EQUATION.

1000 reis = x

6400 reis = 1 Joaneſe

1 Joaneſe = $221\frac{7}{8}$ grains $\frac{11}{12}$ fine

$129\frac{7}{16}$ grains $\frac{11}{12}$ fine = 1 guinea

1 guinea = 252 pence ſterling.

RESULT.

Milreis = 67,50 pence ſterling.

Silver Coins.

Required the intrinſic par reſulting from the compariſon of the crown and the cruſade coined ſince 1750.

EQUATION.

1000 reis = x

480 reis = 1 cruſade

1 cruſade = $265\frac{13}{20}$ grains $\frac{431}{480}$ fine

444 grains $\frac{431}{480}$ fine = 431 grains $\frac{444}{480}$ fine

$464\frac{1}{2}$ grains $\frac{444}{480}$ fine = 1 crown

1 crown = 60 pence.

RESULT.

Milreis = 69,40 pence ſterling.

LONDON AND ROTTERDAM.

Gold Coins.

Required the intrinſic par of exchange between London and Rotterdam, reſulting from the compariſon of the guinea and the ryder.

EQUATION.

1 pound ſterling = x
21 pounds ſterling = 20 guineas
1 guinea = 129$\frac{7}{15}$ grains $\frac{11}{12}$ fine
153$\frac{13}{24}$ grains $\frac{11}{12}$ fine = 1 ryder
1 ryder = 14 florins current.

RESULT.

1 pound ſterling = 11,24 florins current.

Silver Coins.

Required the intrinſic par reſulting from the compariſon of the crown and the florin.

EQUATION.

1 pound ſterling = x
1 pound ſterling = 4 crowns
1 crown = 464$\frac{1}{2}$ grains $\frac{74}{80}$ fine
73 grains $\frac{74}{80}$ fine = 74 grains $\frac{73}{80}$ fine
162$\frac{7}{10}$ grains $\frac{73}{80}$ fine = 1 florin current.

RESULT.

1 pound ſterling = 11,58 florins current.

LONDON AND SPAIN.

Gold Coins.

Required the intrinſic par of exchange between London and Spain, reſulting from the compariſon of the guinea and the doubloon coined ſince 1785.

EQUATION.

1 dollar of exchange = x
1 dollar of exch. = 8 reals of plate
170 reals of plate = 1 doubloon
1 doubloon = $416\frac{13}{20}$ grains $\frac{43}{48}$ fine
44 grains $\frac{43}{48}$ fine = 43 grains $\frac{44}{48}$ fine
$129\frac{7}{16}$ grains $\frac{44}{48}$ fine = 1 guinea
1 guinea = 252 pence ſterling.

RESULT.

1 dollar of exch. = 37,30 pence ſterling.

Silver Coins.

Required the intrinſic par reſulting from the compariſon of the crown and the hard dollar coined ſince 1772.

EQUATION.

1 dollar of exchange = x
85 dollars of exch. = 64 hard dollars
1 hard dollar = $416\frac{2}{5}$ grains $\frac{215}{240}$ fine
222 grains $\frac{215}{240}$ fine = 215 grains $\frac{222}{240}$ fine
$464\frac{1}{2}$ grains $\frac{222}{240}$ fine = 1 crown
1 crown = 60 pence.

RESULT.

1 dollar of exch. = 39,22 pence ſterling.

LONDON AND VENICE.

Gold Coins.

Required the intrinſic par of exchange between London and Venice, reſulting from the compariſon of the guinea and the zecchin.

EQUATION.

1 pound ſterling = x

21 pounds ſterling = 20 guineas

1 guinea = $129\frac{7}{16}$ grains $\frac{176}{192}$ fine

191 grains $\frac{176}{192}$ fine = 176 grains $\frac{191}{192}$ fine

54 grains $\frac{191}{192}$ fine = 1 zecchin

1 zecchin = 22 lire piccoli.

RESULT.

1 pound ſterling = 46,28 lire piccoli.

Silver Coins.

Required the intrinſic par reſulting from the compariſon of the crown and the ducat.

EQUATION.

1 pound ſterling = x

1 pound ſterling = 4 crowns

1 crown = $464\frac{1}{2}$ grains $\frac{37}{40}$ fine

33 grains $\frac{37}{40}$ fine = 37 grains $\frac{33}{40}$ fine

$350\frac{5}{6}$ grains $\frac{33}{40}$ fine = 1 ducat

1 ducat = 8 lire piccoli.

RESULT.

1 pound ſterling = 47,50 lire piccoli.

OF

PRACTICAL SPECULATIONS

IN

MERCHANDIZE.

OF PRACTICAL SPECULATIONS IN MERCHANDIZE.

FROM the conſideration of the ſeveral calculations regarding exchanges, operations in bullion and ſpecie, and pars of exchange and of coins, I ſhall now proceed to treat of thoſe which relate to ſpeculations in merchandize. Such calculations are directed to the diſcovery of the price at which any kind of merchandize may ſtand in, whether imported or exported, in order that, by comparing that price with actual quotations, we may determine the profit per cent which will reſult from the purchaſe of merchandize at one place, and the ſale of it in another.

Calculations of merchandize are much more complicated in elementary matter than thoſe which I have hitherto deſcribed; and, in fact, to reſolve them with preciſion, it is neceſſary to know the following data between two contracting places.

1ſt, The actual price of the goods, the money in which it is ſtipulated, and the cuſtomary terms of payment.

2d, The mutual relation of the weights and meaſures.

3d, The rate of exchange at which the parties may remit, or may draw, and reciprocally.

4th, The duties, commiſſions, and brokerages, as well as the ſhipping charges payable upon exportation.

5th, The amount of freight, whether inwards or outwards, and of the premium of inſurance and policy.

6th, The importation duties, charges of landing, commiſſions, and brokerages, as well as the charges for warehouſe rent on importation.

7th, The difference which there may be between the tares and other allowances at the place of purchaſe, and the correſponding allowances at the place of ſale.

It is no leſs eſſential to conſider, at the ſame time, the unavoidable decreaſe from the weight or from the contents of the goods, occaſioned by their conveyance, as well as the intereſt of the funds employed either in the purchaſe of the goods, or in the payment of the freight, of the premium of inſurance, and of the duties upon exportation and importation reſpectively, from the time of the diſburſement of ſuch funds to that of the ſale of the goods, or to the period of the receipt of the amount of ſuch ſale.

The conſideration of the above mentioned data will lead, in general, to correct reſults upon which ſpeculations may be grounded; obſerving, however, that, as ſeveral of the component parts of theſe calculations are ſubject to variations which cannot always be foreſeen, it would be imprudent to engage in thoſe operations which might not afford a proſpect of greater profit by calculation, than that reſulting from arbitrations of exchange, or from operations in bullion and ſpecie; and it would be ſtill more imprudent to undertake ſpeculations on certain goods, ſuch as corn, fiſh, ſalt, flour, feed, fruit, and liquids, without a previous conſideration of the greater ſuſceptibility of ſuch goods to damage or to leakage, the amount of which is ſo ſeldom recovered by the merchants from the inſurers.

It will be chiefly in calculations of merchandize that the uſe will be felt of the rule of equation which I have uniformly employed in the courſe of this work; and the ſame rule will enable the calculator to obtain, in reſpect to every kind of merchandize, reſults ſtrictly conformable to thoſe which would enſue from the compariſon of Invoices and of Accounts of Sale, whether real or ſimulate, at the ſame time that, by the application of logarithms, the longeſt calculations may be reduced to the ſimple operations of addition and of ſubtraction.

In order to determine the equation reſulting from the analyſis of each propoſition, it will be always neceſſary to place, as the firſt term of the dividend, the deſcription of goods of which the price be required, obſerving in all caſes either to include the charges in the dividend, or to add them to the reſult; ſince, as the price of the commodity purchaſed muſt be neceſſarily augmented in proportion to the charges to be paid to the time of ſale, the numerical reſult muſt be alſo higher.

The application of logarithms is to be effected by firſt adding the logarithms of the invariable numbers of the dividend and of the diviſor reſpectively; and, by ſubtracting the ſmaller ſum from the larger, the difference will be a fixed logarithm to be employed in all the operations of the ſame kind, with the logarithms of the variable numbers in each equation.

As the calculations which may be made in merchandize are innumerable, I ſhall confine myſelf to a few examples, ſufficiently varied, however, to give a preciſe idea of the ſubject; and I ſhall begin with the deſcription of a real tranſaction, in regard to a quantity of wheat ſent from Dantzic to London for account of a merchant at Hamburgh, and which will ſerve to ſhew that the reſults afforded by a rule of equation are the ſame as thoſe which might be derived from the compariſon of invoices and of real accounts of ſale.

Hamburgh, October 12, 1804.

Invoice of 56 laſts of wheat, in 1214 bags, ſhipped from Dantzic to London.

56 laſts wheat, at 620 florins per laſt		F. 34720 0
1214 bags and 20 mats	F. 1334	
Shipping charges at Dantzic . . .	2934	
		4268 0
		F. 38988 0

Drawn on Hamburgh F. 38988, at 166		M.B. 21138 1
Commiſſion on 21138 1, at 2 per cent	422 12	
Inſurance on . 25000 . . . 8 do.	2000 0	
Commiſſion on do. . . . $\frac{1}{3}$ . . .	83 5	
Brokerage on do. . . . $\frac{1}{4}$ . . .	62 8	
Policy	6 0	
		2574 9
		M.B. 23712 10

London, March 2, 1805.

Account of ſale, charges, and net proceeds, of 56 laſts of wheat, received from Dantzic.

Qrs. Buſh.						
SALE.						
590 4, at 110 ſhillings per quarter	£3247	15	0			
Proceeds of bags and mats	37	9	0			
				£3285	4	0
CHARGES.						
Freight and port charges	£229	14	9			
Entry, officers' and cuſtom-houſe charges	9	14	10			
Landing, and carriage to warehouſe	32	17	0			
Sundry ſmall charges	5	5	0			
Factorage of 591 qrs, at 1s per quarter	29	11	0			
Commiſſion on 3285 4, at 2 per cent	65	14	0			
				372	16	7
Net proceeds due 5th April				£2912	7	5

Upon inſpection of the preceding invoice, it will be ſeen that the 56 laſts of wheat coſt 38988 florins at Dantzic, incluſive of all charges; and that Dantzic obtained its reimburſement upon Hamburgh by drawing 21138 marcs and 1 ſhilling banco, which, at the exchange of 166 groſhen per rixdollar banco, are equivalent to 38988 florins, according to the calculation which I have given under the head of Operations of Exchange, p. 96, in the firſt volume. The coſt of the ſame 56 laſts of wheat to the principal at Hamburgh, is, incluſive of all charges, 23712 marcs and 10 ſhillings banco, which, at the rate of 34¼ ſhillings Flemiſh banco per pound ſterling, being the exchange of the day current at Hamburgh upon London, were equivalent to £1846 4 9, and for the greater part of which Hamburgh drew upon London.

The net proceeds of the 56 laſts of wheat at London being £2912 7 5, I ſhall determine the profit per cent ariſing from the operation by the following proportion:

£1846 4 9 : £2912 7 5 :: 100 : x;

the reſult of which being 157¾, denotes, that, in conſequence of the conſiderable advance which took place at London on the price of corn, the operation in queſtion left a net profit of 57¾ per cent, excluſively of the conſideration of the intereſt of the funds employed; and I ſhall now proceed to ſhew, that, by a ſingle rule of equation, the ſame reſult may be obtained.

PROPOSITION.

A merchant at Hamburgh directs his agent at Dantzic to purchaſe a quantity of wheat at 620 florins per laſt, drawing upon Hamburgh for the amount, at the exchange of 166, and ſhipping the wheat for London: it is required to know at what price the wheat will ſtand in, when received at London, and what may be the profit per cent reſulting from the operation; the exchange at Hamburgh upon London being at 34¼, and the ſelling price of the wheat at London at 110 ſhillings per quarter.

Having to find the coſt of a quarter, as received at London, I place 1 quarter as the firſt term of the dividend of the equation to be arranged, and I repreſent its equivalent in ſhillings by x, in the following manner:

1 quarter = x.

Perceiving that 56 laſts, Dantzic meaſure, have rendered $590\frac{1}{2}$ quarters at London, I determine the relation between the two meaſures by the following proportion:

56 laſts : $590\frac{1}{2}$ quarters :: 1 laſt : x;

the reſult of which, or 10,545*, denotes that 1 laſt of Dantzic has rendered 10,545 quarters at London; wherefore I ſay,

1 quarter = x
10,545 quarters = 1 laſt.

The firſt coſt of the wheat at Dantzic being 620 florins per laſt, I ſay

1 quarter = x
10,545 quarters = 1 laſt
1 laſt = 620 florins.

Proceeding to examine the invoice from Hamburgh, I perceive that the charges at Dantzic amount to 4268 florins; and by realizing the following proportion,

F. 34720 : F. 4268 :: 100 : x,

I conclude by the reſult, which is $12\frac{7}{24}$, that the prime coſt of the laſt at Dantzic was augmented by the charges in the proportion of 100 to $112\frac{7}{24}$, wherefore I ſay,

1 quarter = x
10,545 quarters = 1 laſt
1 laſt = 620 florins
100 florins with charges = $112\frac{7}{24}$ florins.

If I were to pauſe in the courſe of this operation, and were deſirous of aſcertaining the price at which a quarter might have ſtood in at Dantzic, incluſive of every charge, I ſhould find, by multiplying 620 by $112\frac{7}{24}$, and by dividing the product by $1054\frac{1}{2}$, that the quarter would be exactly equivalent to $66\frac{1}{40}$ florins. Again: obſerving by the invoice that $590\frac{1}{2}$ quarters have coſt 38988 florins, I ſhould find, by the following proportion,

---

* This quantity correſponds very nearly with $10\frac{11}{20}$, and I have expreſſed it by decimals, for the purpoſe of greater exactneſs in the analyſis of the operation.

$590\frac{1}{2}$ quarters : 38988 florins :: 1 quarter : x,

the exact equivalence, in like manner, of 1 quarter to $66\frac{1}{40}$ florins, being preciſely the ſame reſult as the former.

Reſuming the conſideration of the propoſition, and perceiving that Dantzic is ordered to draw upon Hamburgh at 166 groſhen per rixdollar banco, I reduce the florins into groſhen by oppoſing 1 to 30: I reduce the groſhen into rixdollars banco by oppoſing 166 to 1; and, laſtly, I bring the rixdollars banco into marcs banco by oppoſing 1 to 3.

Proceeding to examine the invoice from Hamburgh, I perceive that the uſual charges of commiſſion, &c. introduced by the principal, amount to 2574 marcs and 9 ſhillings; and by ſtating the following proportion,

M. B. 21138 1 : M. B. 2574 9 :: 100 : x,

which affords a reſult of $12\frac{3}{16}$, I conclude that the coſt of the wheat was virtually augmented at Hamburgh, by reaſon of the charges, in the proportion of 100 to $112\frac{3}{16}$; wherefore, by uniting the partial equations above mentioned, I ſay,

1 quarter = x
10,545 quarters = 1 laſt
1 laſt = 620 florins
100 florins with charges = $112\frac{7}{24}$ florins
1 florin = 30 groſhen
166 groſhen = 1 rixdollar
1 rixdollar = 3 marcs
100 marcs with charges = $112\frac{3}{16}$ marcs.

If I were to pauſe a ſecond time in the courſe of this operation, and were deſirous of knowing at what price a quarter would ſtand in at Hamburgh, incluſive of all charges, I ſhould inter-multiply the terms of the dividend, and divide their product by the product of the inter-multiplication of the terms of the diviſor, whence I ſhould find the exact equivalence of the quarter to $40\frac{5}{32}$ marcs banco; and obſerving, in like manner, by the invoice, that $590\frac{1}{2}$ quarters have coſt $23712\frac{5}{8}$ marcs banco, I ſhould obtain by the following proportion,

$590\frac{1}{2}$ quarters : $23712\frac{5}{8}$ marcs :: 1 quarter : x,

the ſame reſult of $40\frac{5}{32}$ marcs banco; being the ſecond inſtance of coincidence.

Purſuing the operation, and perceiving by the propoſition that the exchange at Hamburgh upon London is at $34\frac{1}{4}$ ſhillings Flemiſh banco per pound ſterling, I reduce the marcs banco into ſhillings Flemiſh banco, by oppoſing 3 to 8, and I afterwards reduce the ſhillings Flemiſh banco into pounds ſterling by oppoſing $34\frac{1}{4}$ to 1. Obſerving further, by the account of ſale at London, that $590\frac{1}{2}$ quarters at 110 ſhillings have produced £3247 15, and that the charges at London amount to £372 16 7, I ſtate the following proportion,

£3247 15 : £372 16 7 :: 100 : x,

by the reſult of which, being $11\frac{1}{2}$, I conclude that the price of the wheat has been augmented at London, by reaſon of the charges, in the proportion of 100 to $111\frac{1}{2}$. Hence I oppoſe 100 pounds ſterling, with the charges, to $111\frac{1}{2}$ pounds ſterling; and as the quarter of wheat is ſold at London for a certain number of ſhillings, I reduce the pounds into ſhillings by oppoſing 1 to 20, determining ultimately the following equation:

1 quarter = x
10,545 quarters = 1 laſt
1 laſt = 620 florins
100 florins with charges = $112\frac{7}{24}$ florins at Dantzic
1 florin = 30 groſhen
166 groſhen = 1 rixdollar
1 rixdollar = 3 marcs
100 marcs with charges = $112\frac{3}{16}$ marcs at Hamb.
3 marcs = 8 ſhillings Flemiſh
$34\frac{1}{4}$ ſhillings Flemiſh = 1 pound ſterling
100 pounds with charges = $111\frac{1}{2}$ pounds at London
1 pound ſterling = 20 ſhillings ſterling.

Upon examination of this equation, I perceive that the only variable terms are the price of the laſt of wheat at Dantzic, the rate of exchange at Dantzic upon Hamburgh, and that at Hamburgh upon London. It is true that the terms of the dividend, which compriſe the charges at Dantzic, at Hamburgh, and at London, might be conſidered as variable terms; but as the variation in thoſe charges in reſpect to other accounts would be limited, it might be eaſily accounted for in the general reſult of the operation; wherefore, after having ſuppreſſed the number 3, which is in each column, I ſhall proceed to add the logarithms of the invariable numbers of the dividend and of the diviſor, reſpectively, in order to determine, by the ſubtraction of the ſmaller ſum from the greater, the fixed logarithm to be employed with the logarithms of the variable numbers which I have already mentioned, both in this and in any ſimilar operation.

SOLUTION BY LOGARITHMS.

Dividend.

Invariable Numbers.

$112\frac{7}{24}$ florins . . = 205035
30 groſhen . . + 147712
$112\frac{3}{16}$ marcs . . + 204994
8 ſhillings . . + 90309
$111\frac{1}{2}$ pounds . . + 204727
20 ſhillings . . + 130103

982880

Diviſor.

Invariable Numbers.

$$\left.\begin{array}{lll} 10{,}54\frac{1}{2} & \text{quarters} & = 102304 \\ 100 & \text{florins} & +\ 2\ldots\ldots \\ 100 & \text{marcs} & +\ 2\ldots\ldots \\ 100 & \text{pounds} & +\ 2\ldots\ldots \end{array}\right\} - 702304$$

Fixed logarithm 280576
Price at Dantzic, 620 florins . + 279239

559815

$$\left.\begin{array}{ll} \text{Dantzic on Hamburgh } 166 & = 222011 \\ \text{Hamburgh on London } 34\ 3 & +\ 153466 \end{array}\right\} - 375477$$

Coſt of 1 quarter at London $69\frac{29}{40}$ ſhill. = 184338
Rate per cent of profit . . . $57\frac{3}{4}$ . . . . + 19801

Price of 1 quarter at London 110 ſhill. = 204139

It will be ſeen by the preceding ſolution, that, after having reſpectively added the logarithms of the invariable numbers of the dividend and of the diviſor, I have deducted the ſum of the logarithms of the diviſor from that of the dividend, the latter being the greater. I have by this means obtained, in the dividend of the equation, a fixed logarithm of 280576, to which I have added the logarithm of 620 florins, being the coſt of a laſt at Dantzic, and which is alſo a part of the ſame dividend. From the ſum of theſe two logarithms, I have deducted the ſum of the logarithms of the two courſes of exchange, which are each a part of the diviſor, and I have ultimately obtained the logarithm 184338, which correſponds with the natural number $69\frac{29}{40}$, and therefore denotes that the wheat, when received at London, ſtands in at $69\frac{29}{40}$ ſhillings per quarter.

Obſerving, further, that the price of wheat at London is 110 ſhillings per quarter, I look to the table for the logarithm of 110, which I find to be 204139, and deducting therefrom 184338, being the logarithm of $69\frac{29}{40}$, there is a remainder of 19801. It now remains to find the profit per cent, for which purpoſe I look to the table, and proceeding from the number 100, or its logarithm 200000, I annex the characteriſtic of that logarithm to the left of 19801, being the logarithm of the difference, and I find that the logarithm 219801 correſponds in the table with the natural number $157\frac{3}{4}$; whence I infer that the profit reſulting from the operation is at the rate of $57\frac{3}{4}$ per cent, which is a reſult exactly ſimilar to that which I had already obtained by the compariſon of the real invoice and account of ſale of the operation in queſtion.

Such, then, is the effect of the application of logarithms to calculations of merchandize, that, after having determined a fixed logarithm in any operation whatever, we may readily deduce, from ſuch quotations of exchange and of merchandize as we may receive, and ſimply by means of a ſmall number of additions and of ſubtractions, which are of themſelves eaſily verified, the price at which any kind of merchandize may ſtand in, and which could not be aſcertained, by the ordinary means of multiplication and of diviſion, without having recourſe to calculations no leſs long than tedious.

The propoſition which I have examined, and the calculations reſulting from it, will be of guidance whenever an invoice and an account of ſale, either real or ſimulate, may be under conſideration with a view to the exportation of merchandize.

I ſhall now conſider another propoſition, which will be of guidance, in like manner, in reſpect to the importation of thoſe articles of merchandize of which a real or a ſimulate invoice may have been furniſhed.

Cognac, May 17, 1805.

Invoice of four puncheons brandy, ſhipped at Charente for London.

4 puncheons brandy, No. 1	72
2	69¼
3	67
4	67¼
	275½ velts.

27½ velts ſpirit of wine, at F. 285 per 27 velts			F. 290	27
248 velts brandy . . . . 190 per ditto . . .			1745	18
275½ velts			F. 2035	45
Colouring F. 4 per 27 velts, box and ſamples	F. 44	81		
Filling up on board 2 v. brandy, at 190	14	7		
			58	88
CHARGES.				
Iron hoops, cooperage, &c.	72	0		
Freight to Charente, and ſhipping charges	42	47		
			114	47
			F. 2208	80
Commiſſion, at 2 per cent			44	16
			F. 2252	96
Carriage, &c. of money from Paris, 2 per cent*			45	4
			F. 2298	0

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* A charge is made of 2 per cent for carriage of money, &c. from Paris to Cognac, the drafts upon London being uſually ſent to Paris to be negotiated, and for returns of the amount.

PROPOSITION.

Let it be premiſed, that the price of a gallon of brandy at London be 4 ſhillings and 6 pence, before the payment of duties, or delivery on ſhore; the rate of exchange at Cognac upon London at 24 francs per pound ſterling; the freight and primage from Charente to London equivalent to 6 per cent; and that the inſurance may be effected at London at 3 guineas per cent: required the price at which a gallon of brandy will ſtand in at London, and what will be the profit per cent, according to the preceding invoice.

In order to reſolve this propoſition, which is directed to finding the price of a gallon of brandy, I place 1 gallon as the firſt term of the dividend of the equation to be arranged, repreſenting by x its equivalent in ſhillings, in the following manner:

1 gallon of brandy = x.

I now compare the meaſures uſed at London and at Cognac; and knowing that 16 velts of Cognac generally render 31 gallons, when ſold at London, I ſay

1 gallon of brandy = x

31 gallons of London = 16 velts of Cognac.

Proceeding to examine the invoice, I perceive that the quantity of $275\frac{1}{2}$ velts, contained in the 4 puncheons, is compoſed of $\frac{9}{10}$ brandy with $\frac{1}{10}$ ſpirit of wine, which is always added at Cognac to render the whole of the degree of ſtrength required for the ſale at London; and as the ſpirit of wine is always ſold at Cognac for half more than the brandy, I conclude that 9 velts of brandy and 1 velt of ſpirit of wine will coſt the ſame price as $10\frac{1}{2}$ velts of pure brandy. In fact, reckoning the amount of $275\frac{1}{2}$ velts of pure brandy at the rate of 190 francs for 27 velts, I find the reſult to be 1938 francs 70 cents; and as the 275½ velts of mixture have coſt, according to the invoice, 2035 francs 45 centimes, it is evident, by the following propoſition,

F. 1938 70 : F. 2035 45 :: 10 : x,

the reſult of which is alſo 10½, that 10 velts with $\frac{1}{15}$ ſpirit of wine are equal to 10½ velts of brandy: thus, as the invoice ſhews that the coſt of the brandy at Cognac was 190 francs per 27 velts, I ſay,

1 gallon of brandy = x
31 gallons of London = 16 velts of Cognac
10 velts with $\frac{1}{10}$ ſpirit = 10½ velts of brandy
27 velts of brandy = 190 francs.

In order now to aſcertain the proportion in which the price of the brandy has been augmented, to the time of its ſhipment incluſively, by the charges mentioned in the invoice, I ſtate the following proportion,

F. 2035 45 without charges : F.2298 with charges :: 100 : x;

and the reſult, which is 112⅞, denotes that 100 francs, with the charges, are equivalent to 112⅞ francs; and as it is ſtated in the propoſition that the exchange at Cognac upon London is at 24 francs per pound ſterling, while the brandy is ſold at London at a certain number of ſhillings per gallon, I determine the following equation:

1 gallon of brandy = x
31 gallons of London = 16 velts of Cognac
10 velts with $\frac{1}{10}$ ſpirit = 10½ velts of brandy
27 velts of brandy = 190 francs
100 francs with charges = 112⅞ francs
24 francs = 1 pound ſterling
1 pound ſterling = 20 ſhillings ſterling.

Upon examination of the preceding equation, I perceive that the only variable numbers are the coſt of the brandy at Cognac, the rate of the exchange at Cognac upon London, and the amount of the charges to the time of ſhipment. For this reaſon I add the logarithms of the numbers 31, 10, 27, and 100, which are compriſed in the diviſor, and are invariable, and I deduct from their ſum that of the logarithms of the numbers 16, 10½, and 20, which are compriſed in the dividend, and are alſo invariable. The reſult is a fixed logarithm of 239638, remaining in the diviſor, and to be employed in the ſolution of the preſent propoſition, as well as in that of any other of a ſimilar nature.

I now obſerve, by the terms of the propoſition, that the freight and the primage are equivalent to 6 per cent, and that the inſurance may be made at 3 guineas per cent; I ſhall reckon it, however, at 4 pounds per cent, on account of the difference between guineas and pounds ſterling, of the charge for the policy and ſtamp, and alſo of the propriety of inſuring a ſum ſomewhat greater, in order to cover the riſk; and eſtimating the brokerage and incidental charges at the port of London at ⅝ per cent, I add the logarithms of theſe ſeveral numbers,

Freight and primage .	6	per cent =	2531
Inſurance	4	ditto . . . +	1703
Brokerage and charges	⅝	ditto . . . +	271
	10⅝		4505

After having obtained theſe logarithms, according to the rule given in page 351 of the firſt volume, I obſerve, that, as the proceeds of the ſale of the brandy in the port of London countervail the amount to be paid for the draft from Cognac, the conſideration of the intereſt of the funds employed is reduced to the leaſt conſequence, for which reaſon I proceed to the ſolution, as follows:

SOLUTION BY LOGARITHMS.

Price of the brandy at Cognac	190	=	227875
Aggregate charges till the time of ſhipment incluſively	$112\frac{7}{8}$	+	205260
			433135
Fixed logarithm	239638		
Cognac on London	24 + 138021	—	377659
Coſt on board	3 7	=	55476
Aggregate charges		+	4505
Coſt at London	$3\frac{47}{48}$	=	59981
Per centage of profit	$13\frac{3}{32}$	+	5340
Price of brandy at London	4 6	=	65321

Hence, whenever an invoice of brandy may be received at London from Cognac, it will be ſufficient to calculate the amount of the charges to the time of ſhipment incluſively, and to ſubſtitute to the logarithms above mentioned thoſe of the natural numbers repreſenting the actual coſt of the brandy at Cognac, the amount of charges to the time of ſhipment incluſively, and the rate of the exchange, in order to aſcertain the coſt of the brandy on board, which will be expreſſed by a number correſponding with the logarithm reſulting from the ſubtraction. By adding afterwards the ſame logarithm to the ſum of the logarithms of the numbers repreſenting the amount of the freight, of the inſurance, and of the other charges, the aggregate will be found to be a logarithm correſponding with a number denoting the price at which the brandy will ſtand in at London.

Again: by looking in the table for the logarithm of the actual ſelling price of brandy at London, and by deducting from ſuch logarithm that of the price at which the brandy may ſtand in, there will be a difference which will correſpond in the table with a number denoting the profit per cent; obſerving that the reſearch be commenced from and after the logarithm 200000, which anſwers to the natural number 100.

It is evident that, if, inſtead of an invoice, not any other data were received from Cognac than a quotation of the courſe of exchange, and of the price of brandy, and that ſuch price had varied but little, it would be ſufficiently correct to inſert in the new calculation the ſame logarithm of the numbers repreſenting the charges on board; but, in caſe the prime coſt ſhould have undergone any material alteration, it would be neceſſary to conſider the effect of ſuch alteration on the charges to the time of ſhipment either as increaſing or as diminiſhing the amount, and thence to determine the approximate total of the charges in queſtion.

The analyſis of the propoſition above mentioned is equally applicable to any other of a different nature, and will ſerve to ſhew, in general, the utility and convenience of determining a fixed logarithm for each operation, by which means it will be eaſy, upon the receipt of real or of ſimulate invoices, or even of mere quotations of exchange and of merchandize, to diſcover in a few minutes either the price at which any ſort of merchandize may ſtand in, or the eventual profit per cent by their ſale.

It often happens in buſineſs, that, when certain articles of merchandize ſell advantageouſly at the place of importation, the merchants reſiding there ſend ſimulate accounts of ſale of ſuch articles to their correſpondents abroad, with a view to enable them to diſcover, by a compariſon of the meaſure of the proceeds with the prices at the place of exportation, whether it might not be advantageous to conſign, upon ſpeculation, a certain quantity of the articles under conſideration. It is not, however, always eaſy to effect ſuch calculations; and for this reaſon I ſhall conſider how they may be ſimplified.

Amſterdam.

Pro forma ſales of 33 hogſheads Jamaica ſugar.

47978	lbs groſs				
330	draft, 10 lbs per hhd				
47648					
9529	tare, 20 per cent				
38119	lbs net, at 16¾ grotes per lb,			F. 15903	5
	Deduction, 2 per cent . .			318	1
				F. 15585	4
	Commiſſion, 2 per cent .			311	14
				F. 15273	10
	Duties, &c.	F. 334	16		
	Landing charges . .	26	0		
	Weighing, &c. . . .	126	10		
	Warehouſe rent . . .	29	14		
	Brokerage	28	10		
				545	10
				F. 14728	0

Upon examination of this ſimulate account of ſale, I perceive that the groſs proceeds of the ſale, being 15903¼ florins, are reduced by the charges to 14728 florins; whence I conclude that the proceeds of a pound of ſugar will be virtually reduced in the ſame manner at the time of actual ſale. In calculating, therefore, the following proportion,

15903¼ florins : 14728 florins :: 16¾ grotes : x,

I deduce from the reſult, which is 15½, that the price of a pound of ſugar at Amſterdam, after deduction of every charge, is equivalent to 15½ grotes Flemiſh current; and it is upon ſuch price that I ſhall ground my calculation.

PROPOSITION.

The price of ſugar at London is 55 ſhillings per cwt; and, according to a ſimulate account of ſale received from Amſterdam, the ſelling price of the ſame commodity is at that place 16¾ grotes Flemiſh current per pound, which is virtually reduced to 15½ grotes by deduction of the charges at Amſterdam. A quantity of ſugar being exported thither, it is required to know at what price per pound it will ſtand in on arrival, and what may be the profit per cent on the ſale, the exchange of London upon Amſterdam being at 37, the agio on bank money at 4¾ at Amſterdam, the freight equivalent to 2½ per cent, the premium of inſurance to 2 per cent, and the charges at London to the time of ſhipment incluſively being eſtimated at 1¼ per cent.

In order to determine the relative equation, the object of which is that of aſcertaining the price of a pound of ſugar at Amſterdam, I ſay,

1 lb of ſugar = x.

I then examine the account of ſale, and perceiving that there is an allowance at Amſterdam of 20 per cent for tare, and that the draft of 10 lbs per hogſhead is equivalent to $\frac{11}{16}$ per cent, I conclude that 100 lbs of raw ſugar produce but $79\frac{5}{16}$ lbs net; wherefore I ſay,

1 lb of ſugar = x
$79\frac{5}{16}$ lbs net = 100 lbs groſs.

I have now to compare the weight uſed at Amſterdam with that of London; and, by referring to the table, I perceive that 112 lbs of London are equivalent to 102,82 lbs of Amſterdam; but as the fraction of $\frac{82}{100}$ may be rejected on account of the loſs of weight which may enſue, I ſay,

1 lb of ſugar = x
$79\frac{5}{16}$ lbs net = 100 lbs groſs
102 lbs of Amſterdam = 112 lbs of London.

The cuſtomary tare at London upon ſugar in hogſheads being 12 lbs per 112 lbs, and the draft 1 lb per hogſhead, which may be eſtimated in the aggregate at $12\frac{1}{12}$ of a pound per cwt, it follows that 112 lbs groſs are reduced to $99\frac{11}{12}$ lbs net; and perceiving by the propoſition that the price of ſugar at London is 55 ſhillings per 112 lbs, that 20 ſhillings ſterling, at the exchange of 37, are equivalent to 37 ſhillings Flemiſh banco, I reduce the bank money into current money, by oppoſing 100 to $104\frac{3}{4}$; and then the ſhillings Flemiſh current into grotes Flemiſh current, by oppoſing 1 to 12; and as it is in the latter of theſe monies that the price of the ſugar is fixed at Amſterdam, the equation becomes complete, as follows:

1 lb of ſugar = x

$79\frac{5}{16}$ lbs net = 100 lbs groſs

102 lbs of Amſterdam = 112 lbs of London

112 lbs groſs = $99\frac{11}{12}$ lbs net

112 lbs of ſugar = 55 ſhillings ſterling

20 ſhillings ſterling = 37 ſhillings Flemiſh

100 ſhillings banco = $104\frac{3}{4}$ ſhillings current

1 ſhilling Flemiſh = 12 grotes Flemiſh.

Upon examination of the preceding equation, I perceive that the only variable numbers are thoſe of the coſt of the ſugar at London, of the courſe of exchange, and of the agio on bank money. After adding, therefore, the logarithms of the invariable numbers in the diviſor, I ſubtract from their ſum that of the logarithms of the invariable numbers in the dividend, and the remainder is a fixed logarithm in the diviſor of 417937. I now add the logarithms of the charges mentioned in the propoſition.

Freight . . . . $2\frac{1}{2}$ per cent = 1072

Inſurance . . . . . 2 ditto + 860

Shipping charges $1\frac{1}{4}$ ditto + 540

$5\frac{3}{4}$ 2472

and, having aſcertained the amount, I proceed to the following ſolution :

SOLUTION BY LOGARITHMS.

Price of ſugar at London	55	=	174036
London on Amſterdam . .	37	+	156820
Agio on bank money	$104\frac{3}{4}$	+	202015
			532871
Fixed logarithm		—	417937
			114934
Aggregate charges		+	2472
Coſt at Amſterdam	$14\frac{14}{15}$	=	117406
Per centage of profit	$3\frac{13}{16}$	+	1627
Price of ſugar at Amſterdam	$15\frac{1}{2}$	=	119033

The ſolution of this propoſition is applicable to that of any other propoſition of the ſame kind, or otherwiſe; and it will ſerve to evince the neceſſity of conſidering the difference between the allowances made at the place of purchaſe, and ſimilar allowances at the place of ſale. It will alſo ſhew, that, upon the receipt of a ſimulate account of ſale of any deſcription whatever of merchandize, by firſt reducing the rate of ſale incluſive of the charges, to the rate of ſale excluſive of the charges, by means of a proportion ſimilar to that which I have pointed out, the rate ſo reduced will ſerve as the baſis of a calculation conformable to the above mentioned. Thus, after having once determined the fixed logarithm of each operation, it will be eaſy to aſcertain, in a very few minutes, from the quotations of exchange and of merchandize which may be afterwards received, either the price at which the merchandize under conſideration may ſtand in, or the profit per cent which the ſale may afford.

It will be obſerved, by the three operations which I have juſt deſcribed, that, in reſpect to the arrangement of the charges, I have not followed the ſame method as that which I had previouſly pointed out, and which, indeed, I had till then employed, being that of adding the charges, in order to inſert the ſum in the equation, or to add it to, or deduct it from, the reſult.

In fact it has been ſeen, by the invoice of the wheat from Dantzic, that the charges at Hamburgh have affected not only the amount of the purchaſe, in the firſt inſtance, at Dantzic, but alſo the charges there incurred. It will have alſo occurred to the reader, upon examination of the account of ſale at London, that the factorage and commiſſion are calculated upon the aggregate of the ſale, or the groſs proceeds, which compriſe the firſt coſt, the total of the charges, and alſo the profit ariſing from the ſpeculation. Hence, after having ſucceſſively determined the amount of the charges at each of the three places, I have found it neceſſary, in order to obtain the ſame reſult, to place the charges ſucceſſively in the dividend of the equation; and it is obſervable, that, if I had added them, and taken the logarithm correſponding to their ſum, ſuch logarithm would have been leſs than the aggregate of the partial logarithms.

Again: it has been ſeen that, before I proceeded to the ſolution of the operation relative to the brandy, I employed ſeparately the logarithms of the freight, of the inſurance, and of the brokerage, the ſum of which was 4505; whereas, if I had aſſumed the logarithm of the number $10\frac{5}{8}$, repreſenting the aggregate of thoſe charges, I ſhould have found it to be only 4385.

The difference, therefore, between the ſum of the logarithms of the ſeparate charges and the logarithm of the aggregate of thoſe charges is 120, which is equivalent, by the table, to rather more than $\frac{1}{4}$ per cent.

In the deſcription, too, of the third operation, a ſimilar difference may be remarked of 44, between the logarithm of $5\frac{3}{4}$, or the aggregate of the charges, and the ſum of the reſpective logarithms. Hence it is obvious that the method generally practiſed of adding the charges is not rigorouſly exact.

Arbitrations of exchange, and operations of bullion and ſpecie, which offer but limited, though, in general, certain profit, occaſion charges of little comparative conſequence; whence it is that the correctneſs of the definitive reſults is affected in a degree far too trivial to have led me to introduce any innovation in reſpect to that method which has hitherto obtained in buſineſs, and from which it would be difficult to ſwerve, without calculating by logarithms.

This obſervation is eſſential, and ſerves to demonſtrate the ſuperiority of calculation by logarithms; for, if it were intended to arrive at the ſame degree of exactneſs, in the ſolution of the operation regarding the brandy, by the ordinary means of arithmetic, it would be neceſſary to bring into account the charges to be added, by inſerting the following terms in the equation.

100 with freight . . . . = 106
100 with inſurance . . = 104
100 with brokerage . . = $100\frac{5}{8}$

But, in order to avoid calculations which may be ſaid to be almoſt endleſs, the general method is that of adding the charges, and of ſtating, 100 with charges, 110$\frac{5}{8}$;

notwithſtanding that the reſults obtained upon that principle be not ſo correct as they might be otherwiſe.

Whenever, therefore, logarithms be uſed in the calculation of merchandize, it will be proper, inſtead of aſſuming the logarithm of the ſum of the charges, to take the partial logarithms of the numbers repreſenting each of the ſame charges, and, by this method, there will not be any danger that the reſults be erroneous, the charges upon merchandize being always very conſiderable, and often more ſo than the amount of the firſt coſt.

I ſhall now deſcribe an operation calculated upon the receipt of a mere quotation of the price of an article of merchandize.

PROPOSITION.

While the price of coffee at London is 146 ſhillings per cwt, a quotation of the ſame article is received from Hamburgh of 18$\frac{1}{2}$ ſhillings banco per pound. The exchange of London upon Hamburgh is at 35, the freight and primage equivalent to 4$\frac{1}{2}$ per cent, and inſurance may be effected from London to Hamburgh at 1$\frac{1}{2}$ guinea per cent. It is required to know at what rate a pound of coffee will ſtand in at Hamburgh, and what will be the profit per cent reſulting from the ſpeculation.

In order to reſolve this propoſition, it is neceſſary, in the firſt place, to determine the relative equation; for which purpoſe I ſay,

$$1 \text{ lb of coffee} = x.$$

To find the relation of the weight of Hamburgh to that of London, I refer to the table, which ſhews that 112 lbs of London are equivalent to 104$\frac{4}{5}$ lbs of

Hamburgh; but as I may eſtimate the loſs of weight to the time of ſale at $\frac{4}{5}$ per cent, I ſay,

1 lb of coffee = x

104 lbs of Hamburgh = 112 lbs of London.

I now obſerve, by the propoſition, that the price of coffee at London is 146 ſhillings; that the exchange of London upon Hamburgh is at 35 ſhillings Flemiſh banco per pound ſterling; and that it is neceſſary to reduce the ſhillings Flemiſh banco into ſhillings banco, ſince it is by the latter of theſe monies that coffee is ſold at Hamburgh; wherefore I ſay,

1 lb of coffee = x

104 lbs of Hamburgh = 112 lbs of London

112 lbs of coffee = 146 ſhillings ſterling

20 ſhillings ſterling = 35 ſhillings Flemiſh

1 ſhilling Flemiſh = 6 ſhillings banco.

The equation being thus determined, I efface the number 112 in each column, and, perceiving that the only variable numbers are the price of the coffee at London, and the rate of exchange, I begin by ſeeking the fixed logarithm to be employed in the ſolution of this operation, and in that of any other of the ſame kind, and I find that ſuch logarithm is 253991, and is in the diviſor.

I have now to conſider the aggregate of the charges.

CHARGES PER CENT AT LONDON.

Brokerage	$\frac{1}{2}$	= 217
Shipping charges ..	$1\frac{3}{8}$	+ 593
Inſurance	2	+ 860
	$3\frac{7}{8}$	1670

The inſurance is here advanced to 2 per cent, inſtead of $1\frac{1}{2}$ guinea, for the reaſon mentioned in one of the preceding operations.

CHARGES PER CENT AT HAMBURGH.

Freight and primage	4½	= 1912
Landing charges and warehouſe rent	1	+ 432
Brokerage	⅝	+ 271
Commiſſion and guarantee	3⅞	+ 1651
Intereſt of funds	1½	+ 647
	11½	4913

The brokerage is paſſed at ⅝ inſtead of ½, and the commiſſion and guarantee at 3⅞ inſtead of 3, ſince they will ultimately be computed upon the amount of the ſale; while, in the preſent calculation, they only bear upon the firſt coſt as inſerted in the equation. The intereſt of the funds employed in the ſpeculation is eſtimated at 1½ per cent, in the ſuppoſition that London will draw upon Hamburgh for ⅔ of the amount, and that the coffee may not be ſold immediately after its arrival.

SOLUTION BY LOGARITHMS.

Price of coffee at London	146	= 216435
London on Hamburgh	35	+ 154407
		370842
Fixed logarithm		— 253991
		116851
Charges at London = 1670 at Hamburgh + 4913		+ 6583
Coſt at Hamburgh	17$\frac{3}{20}$	= 123434
Per centage of profit	7$\frac{17}{20}$	+ 3283
Price of coffee at Hamburgh	18½	= 126717

It will be obſerved, that the charges at London being 3⅞ in the aggregate, and at Hamburgh 11½, their ſum would be 15⅜, while the ſum of the partial logarithms of the ſame charges, which is 6583, correſponds with the arithmetical number 16⅜, whence it is obvious that the difference is 1 per cent. In caſe, therefore, the trouble be not taken of extracting the partial logarithms of the charges, which, however, may be done very readily, it will be neceſſary that the reſult obtained otherwiſe be conſidered as involving the difference referred to.

It is evident that reſults, ſuch as that of the operation above mentioned, cannot be rigorouſly exact; they approach, however, ſufficiently near to truth to be uſed with confidence, ſince there is not any ſurer method on which ſpeculations, unprovided with invoices or with accounts of ſale, may be grounded.

OF ORDERS IN MERCHANDIZE.

It ſometimes happens that merchants tranſmit to their correſpondents what may be called *orders in merchandize,* by which they are authoriſed to purchaſe certain deſcriptions of goods, provided that the coſt be within thoſe limits which are then determined by the merchants themſelves, incluſive of all charges. The following is an abſtract from a real order given in the preſent year, and the analyſis of which will be of guidance in the calculation of any ſimilar orders.

ORDER IN MERCHANDIZE.

While the price of wheat at London is 100 ſhillings per quarter, and the exchange of London upon Liſbon at 61 pence per milreis, a merchant at London receives an order from a correſpondent at Liſbon to ſend thither

2000 alquiers of wheat, provided that the price of each may not exceed 900 reis, incluſive of all charges, to the port of Liſbon.

In order to aſcertain the poſſibility of the execution of the order in queſtion, it is eſſential to know the relation between the alquier and the quarter, the rate of affreightment for Liſbon, the premium of inſurance, and the amount of the other charges to the time of ſhipment incluſively.

In order to find the relation between the meaſures, I refer to the table of compariſon of meaſures of corn, which ſhews that the quarter correſponds with 21 alquiers and a ſmall fraction, which I ſhall reject, on account of the difference which may enſue from the reſpective modes of meaſuring, or from any incidental loſs, and being appriſed that I may freight a veſſel for Liſbon at the rate of 6 ſhillings per quarter, which will of courſe affect the prime coſt of 100 ſhillings per quarter in the ratio of 6 per cent, and alſo that the terms of inſurance are 3 guineas per cent, which are equivalent, as I have elſewhere obſerved, to 4 per cent, I ſhall eſtimate the charges of commiſſion, factorage, &c., at 4 per cent. I have thus the neceſſary data to reſolve the queſtion of the poſſibility of the execution of the order, which may be effected either by ſeeking the price which I ſhould be allowed to give for a quarter at London, according to the ſpecific limit of 900 reis per alquier, and the exchange of 61, at which I may draw upon Liſbon; or by ſeeking the price at which an alquier will ſtand in at Liſbon, ſuppoſing that the purchaſe be made at London at 100 ſhillings per quarter. The following equations will exemplify each method :

FIRST EQUATION.

1 quarter = x
1 quarter = 21 alquiers
1 alquier = 900 reis
1000 reis = 61 pence
12 pence = 1 ſhilling.

SECOND EQUATION.

1 alquier = x
21 alquiers = 1 quarter
1 quarter = 100 ſhillings
1 ſhilling = 12 pence
61 pence = 1000 reis.

In the former of theſe equations the only numbers ſubject to variation are thoſe of the price, in reis, of an alquier, and the rate of the exchange; and the ſimilar numbers in the ſecond equation are the price, in ſhillings, of a quarter, and the ſame rate of exchange.

The other numbers, being invariable, give a fixed logarithm of 275696, which, in the firſt equation, is in the diviſor, and, in the ſecond, in the dividend.

Previouſly to proceeding to the reſpective ſolutions, I recapitulate the logarithms of the ſeveral charges, namely,

Freight . . . . 6 per cent = 2531
Inſurance . . . . . 4 ditto + 1703
Shipping charges 4 ditto + 1703
5937

SOLUTION OF THE FIRST EQUATION.

Price at Liſbon . . . . . . 900 reis . . . = 295424
London on Liſbon . . . . . 61 pence . + 178533
473957
Fixed logarithm . . . . — 275696
198261
Aggregate charges . . . . — 5937
Price of 1 quarter . . . . . 83$\frac{4}{5}$ ſhillings = 192324

SOLUTION OF THE SECOND EQUATION.

Fixed logarithm		=	275696
Price at London	100 ſhillings	+	200000
			475696
London on Liſbon	61 pence	—	178533
			297163
Aggregate charges		+	5937
Price of 1 alquier	1074 reis . . .	=	303100

In the firſt ſolution the charges are deducted from the reſult; for, as the price of 900 reis, which an alquier is not to exceed, is incluſive of the charges, it follows that a quarter of wheat ſhould be purchaſed at London at a rate ſo much the cheaper as the charges may be higher. I conclude, therefore, that the order cannot be executed, ſince the limits require that a quarter be purchaſed at London at $83\frac{4}{5}$ ſhillings, while the actual price is not leſs than 100 ſhillings.

In the ſecond ſolution I have added the charges to the reſult, ſince the price in reis at which an alquier will ſtand in at Liſbon will be greater in proportion as the charges may be more conſiderable. I conclude, therefore, in this inſtance alſo, that the order cannot be executed; ſince, by purchaſing wheat at London at 100 ſhillings, and drawing upon Liſbon at 61, an alquier would ſtand in at Liſbon at 1074 reis, which would exceed the limits preſcribed by 174 reis.

OF ARBITRATIONS OF MERCHANDIZE.

As it is often uſeful in commerce to determine by calculation the place which may afford the greateſt profit by the ſale of merchandize intended to be exported, I ſhall conclude this part of my work by an arbitration of merchandize.

The name of *arbitration* has been given to reſearches of the nature referred to, by reaſon, that, as the relative calculations denote the expected profit per cent at each place, the calculator becomes his own *arbiter;* that is, it reſts with him to direct the ſpeculation to that place which, in all probability, will afford a maximum of profit.

In order to calculate arbitrations of merchandize, it is evidently neceſſary to know the ſeveral particulars which I have mentioned at the beginning of the ſubject under conſideration; and the following propoſition, being purpoſely analyſed, will be of guidance in any ſimilar calculations.

PROPOSITION.

A merchant at Bilboa, having a quantity of Spaniſh wool to be exported, of the deſcription called *Segovianas,* which have coſt him 325 reals of vellon per arroba, receives advice from London that ſuch wool may be there diſpoſed of at 6 ſhillings per pound, allowing 6 months credit; and from Amſterdam he is informed, that the price of the ſame article is 82 ſtivers banco per pound, allowing 21 months credit, and a deduction of 1 per cent for prompt payment. It is required to know the profit per cent reſpectively which a ſale at each place would afford; the exchange of Bilboa upon London being at 37 pence ſterling per dollar of exchange, and that of the ſame place upon Amſterdam at 87 grotes Flemiſh banco per ducat of exchange.

In order to reſolve this propoſition, it is neceſſary, in the firſt place, to conſider the difference between the terms of payment, and to deduct from the amount of the ſelling price of the wool at each place a diſcount equivalent to the ſame terms, whence the reſpective rate of ſale will be virtually reduced to a rate for ready money.

Thus we may ſuppoſe that the merchant at Bilboa will obſerve that the 6 months credit on the ſale, mentioned in the quotation from London, are equivalent to a deduction of $2\frac{1}{2}$ per cent, or of half the diſcount of 5 per cent per annum, and that he will, therefore, ſtate the following proportion:

$$100 : 97\tfrac{1}{2} :: 6 \text{ ſhillings} : x;$$

the reſult of which, or $5\frac{17}{20}$, will denote to him that the price of a pound of wool, ſold at London at 6 months credit, is virtually reduced from 6 ſhillings to $5\frac{17}{20}$ ſhillings, in reſpect to a ſale for ready money.

Obſerving, in like manner, that the price at Amſterdam of 82 ſtivers banco per pound is ſubject to 21 months credit, which are equivalent to a deduction of 14 per cent, according to the uſual diſcount or rebate on merchandize of 8 per cent per annum, the merchant at Bilboa will naturally add the 14 per cent to the allowance of 1 per cent for prompt payment, and ſtate the following proportion:

$$100 : 85 :: 82 \text{ ſtivers} : x;$$

the reſult of which, being $69\frac{7}{10}$, will denote to the calculator, that the price of a pound of wool at Amſterdam, in reſpect to a ſale for ready money, is $69\frac{7}{10}$ ſtivers banco.

Having thus determined the intrinſic prices upon which the reſpective calculations are to be grounded, our merchant will now proceed to examine the two operations reſulting from the arbitration itſelf.

OPERATION BY LONDON.

As the rate per cent of profit cannot be aſcertained but by an equation directed to the diſcovery of the price at which the wool may ſtand in at London, for the purpoſe of comparing the ſame price with that of the quotation received, it follows that

1 lb of wool = x.

The cuſtomary draft at London being 2 lbs per bag, and the tare 20 lbs per bag, weighing in general about 200 lbs, it is inferred that the draft and tare are equivalent to a deduction from the groſs weight of 11 per cent; wherefore

1 lb of wool = x
89 lbs net = 100 lbs groſs.

Preſuming that the merchant at Bilboa will have the ſame information as that which the reader may obtain by referring to the table of the compariſon of weights, and to the deſcription of weights under the head of Spain, namely, that 112 lbs of London are equivalent to $103\frac{7}{10}$ lbs of Bilboa; and that the arroba, or weight by which the wool is purchaſed, is equivalent to 25 lbs; he will have to combine ſuch particulars with the whole coſt of 325 reals of vellon per arroba, wool being ſold at Bilboa without any allowance for tare, or any rebate. The ſtatement, therefore, will be,

1 lb of wool = x
89 lbs net = 100 lbs groſs
112 lbs of London = $103\frac{7}{10}$ lbs of Bilboa
100 lbs of Bilboa = 4 arrobas
1 arroba of wool = 325 reals of vellon.

At this ſtage of the calculation, the merchant at Bilboa will perceive that the exchange of Bilboa upon London is at 37 pence ſterling per dollar of exchange;

wherefore he will prepare the reduction of the reals of vellon into dollars of exchange, by oppoſing 256 to 17. He will then oppoſe 1 dollar of exchange to 37 pence ſterling; and, as the price of wool at London is expreſſed by a certain number of ſhillings, he will, in like manner, prepare the reduction of the pence into ſhillings, and determine the following equation:

1 lb of wool = x
89 lbs net = 100 lbs groſs
112 lbs of London = $103\frac{7}{10}$ lbs of Bilboa
100 lbs of Bilboa = 4 arrobas
1 arroba of wool = 325 reals of vellon
256 reals of vellon = 17 dollars of exchange
1 dollar of exch. = 37 pence ſterling
12 pence ſterling = 1 ſhilling ſterling.

Upon examination of the equation as it will then ſtand, the merchant will ſee that the coſt of the wool at Bilboa, and the courſe of exchange, are the only variable numbers; and he will accordingly determine the fixed logarithm, which will be found to be 363774, in the diviſor.

OPERATION BY AMSTERDAM.

In order to determine an equation which will denote the price at which a pound of wool will ſtand in at Amſterdam, it will be neceſſary to begin by ſaying,

1 lb of wool = x:

conſidering now, that an allowance is conſtantly made at Amſterdam of 4 lbs per bale, as alſo of 14 lbs per bale for tare, the calculator will eſtimate the whole at 9 per cent, the groſs weight of each bag being about 200 lbs.

But, as there is a further allowance at Amſterdam of 24 lbs in every 175 lbs, which is equivalent to $13\frac{5}{7}$ lbs per cent, the calculator will add 9 to $13\frac{5}{7}$, and ſay,

1 lb of wool = x
$77\frac{2}{7}$ lbs net = 100 lbs groſs.

He will then, in order to reduce the weight of Amſterdam into that of Bilboa, oppoſe 100 lbs of Bilboa, or 4 arrobas, to $99\frac{1}{6}$ lbs of Amſterdam; and, as each arroba coſts 325 reals of vellon, he will ſay,

1 lb of wool = x
$77\frac{2}{7}$ lbs net = 100 lbs groſs
$99\frac{1}{6}$ lbs of Amſterdam = 4 arrobas of Bilboa
1 arroba of wool = 325 reals of vellon.

The exchange of Bilboa upon Amſterdam being at 87 grotes Flemiſh banco per ducat of exchange, it is neceſſary to reduce the reals of vellon into ducats of exchange; and, as 6000 reals of vellon are equal to 289 ducats of exchange, he oppoſes theſe numbers to each other: he will then oppoſe 1 ducat of exchange to 87 grotes Flemiſh banco; and, after reducing the grotes into ſtivers banco, being the deſcription of money in which the price of wool is fixed at Amſterdam, he will have the materials for the following equation:

1 lb of wool = x
77^{2} lbs net = 100 lbs groſs
$99\frac{1}{6}$ lbs of Amſterdam = 4 arrobas of Bilboa
1 arroba of wool = 325 reals of vellon
6000 reals of vellon = 289 ducats of exchange
1 ducat of exchange = 87 grotes Flemiſh
2 grotes Flemiſh = 1 ſtiver banco.

Proceeding to examine this equation, he will perceive that the only variable numbers are the price of the wool at Bilboa, and the courſe of the exchange, whence he will determine the fixed logarithm, which is 290069, in the diviſor.

SOLUTION OF THE FIRST EQUATION.

Price of wool at Bilboa	325	=	251188
Bilboa on London	37	+	156820
			408008
Fixed logarithm		—	363774
Coſt at London	$2\frac{37}{48}$	=	44234
Per centage of profit	$105\frac{27}{32}$	+	31353
Price of wool at London	$5\frac{7}{10}$	=	75587

SOLUTION OF THE SECOND EQUATION.

Price of wool at Bilboa	325	=	251188
Bilboa on Amſterdam	87	+	193952
			445140
Fixed logarithm		—	290069
Coſt at Amſterdam	$35\frac{13}{24}$	=	155071
Per centage of profit	$96\frac{1}{8}$	+	29252
Price of wool at Amſterdam	$69\frac{7}{10}$	=	184323

From the ſolution of the equations above mentioned, it is to be inferred that, by the operation by London, the profit would be $105\frac{27}{32}$ per cent, minus the charges; while the profit per cent, by the operation by Amſterdam, would be $96\frac{1}{8}$, minus the charges. Hence, as the merchant at Bilboa will conſider that the commiſſion, the brokerage, and other charges incidental to the ſale, may be deemed to be nearly of the ſame magnitude, whether incurred at London or at Amſterdam, he will be determined, in the choice of one of thoſe places, by the joint conſideration of the reſpective per centage of profit, of the rates of freight, and of the premiums of inſurance; obſerving, however, that there is a ſlight difference in favour of Amſterdam in reſpect to the duties, which, in that city, are not more than 15 ſtivers banco per bale; while the duties at London are at preſent at the rate of a halfpenny per pound, and 27½ per cent on the amount of that duty.

To conclude: the explanation of this propoſition is obviouſly applicable to any other involving the diſcovery of the profits to be derived from the ſale of any deſcription of goods at any given place; and, by inſtituting as many operations as there may be places under conſideration, the moſt effective means will be taken of guiding choice by calculation.

DESCRIPTION

OF

MONIES, WEIGHTS,

AND

MEASURES.

DESCRIPTION OF MONIES, WEIGHTS, AND MEASURES.

IN that ſtate of ſociety in which diſtinction of property was firſt eſtabliſhed, the advantage muſt have been ſoon felt of referring to a common meaſure of value each of the conſumable neceſſaries of life, as articles of which an individual might preſcriptively appropriate to himſelf the excluſive uſe. Different metals were at firſt ſubſtituted to the ſeveral productions of the animal and vegetable kingdoms, as the ſigns of ſuch common meaſure; and as it was obviouſly expedient to determine the quantity of metal given or received in exchange, ſpecific weights were invented.

Thus the Egyptians, ſeveral nations of the Eaſt, the Greeks, and the Romans, appreciated the metals which they reſpectively uſed merely as weights; and the Greeks, in particular, never gave any other denominations to the coins which they employed than thoſe expreſſive of their reſpective weights. It was only in modern times, after the introduction of the practice of determining the quality as well as the quantity of the ſeveral portions of metals by affixing a particular ſtamp to each, and by making each of a certain ſhape, that it was agreed to conſider ſuch portions as poſſeſſing a value abſtracted from that inherent in their weight and fineneſs.

The firſt coins which were circulated, not by weight but by tale, were of the coarſer metals, ſuch as copper and iron. The common baſis of the coins of the Greeks, properly ſo called, was a weight called *obolus,* 6 of which compoſed the drachma.

The Romans had recourſe, at firſt, to a copper coin of irregular ſhape, without any ſtamp, and which was received only by weight. About the year of Rome 176, they adopted a more perfect coinage of the ſame metal, the baſis of which was the *as,* or one pound weight; and the pieces of ſuch coinage were ſtamped with the figures of thoſe animals, ſuch as oxen or ſheep, of which they repreſented the value.

It was not till the year 485 that any coin was ſtruck of ſilver: it received the name of *denarius,* and contained an ounce of pure metal.

Not any gold coins appeared till the year 547, when a pound of pure gold was coined into 96 pieces, which received indifferently the denominations of *aureus, ſolidus, ſols,* or merely that of *denarius.*

Without adverting to the alterations in reſpect to the ſeveral coinages of the antients, I ſhall proceed to conſider the new ſyſtem introduced by Charlemagne, and the baſis of which was the pound "*de marc,*" troy-weight.

The pound in queſtion, which was compoſed of 12 ounces of pure ſilver, conſtituted at that time the money-pound, or that in which accounts were kept in France. Both pounds were divided in the ſame way; the latter by the mode of computing, and the former by the mode of coinage, that is, into 20 parts called *ſols,* each of which was ſubdivided into 12 *deniers;* and as the ſame denominations were uſed in reſpect to the component parts of the pound weight and to thoſe of the money-pound, it is obvious that the analogy was perfect.

The pound, as it is thus deſcribed, was introduced towards the cloſe of the eighth century into the greater number of the ſtates of Europe. It has ſince been every where reduced in its primitive value, according to the policy or to the wants of the rulers of the reſpective ſtates; but a pound is ſtill extant in the ſame ſtates, having the ſame diviſions into 20 parts, and ſubdiviſions into 12 parts, though the value of each be different, and though each be deſtitute of any other relation to the other than that of a common origin. The ſame pounds are alſo in general the baſis of the monies of account.

It was at firſt my intention to have treated of the ſyſtems of coinage of the principal European nations; to have deſcribed the practical alterations introduced in this reſpect by their reſpective rulers; the weights to which the coins were referred; the ſtandard of the ſame coins; the allowances made to the officers of the mints for the remedy of the mint; the numeral value at which the coins were ſeverally received in circulation; and, laſtly, the proportion gradually eſtabliſhed between gold and ſilver, in conſequence of the coinage of the former of theſe metals by compariſon with the coinage of ſilver. This laborious undertaking was begun, and, if executed, might have intereſted a certain deſcription of my readers. Reflecting, however, that The Elements of Commerce are directed, both in their origin and in their tendency, to public utility, rather than to any object of curioſity, and that I have hitherto confined myſelf to treating of that which is extant, with excluſion of what is now obſolete, I have abandoned a purpoſe which would have been the means of adding more to the bulk than to the real commercial importance of the publication.

I ſhall proceed, therefore, to explain that which is meant, in reſpect to coinage, by the words *remedy of the mint;* when I ſhall offer a few obſervations upon the practice of conſidering certain monies as imaginary; and conclude by developing the plan of this part of my work, and by citing the authorities upon which I have grounded the deſcription and relation of the monies, weights, and meaſures, which are therein referred to.

It was enacted by the French government on the 1ſt January, 1726, that 8$\frac{3}{10}$ crowns ſhould be coined from the marc of 8 Paris ounces, and be each of the reputed ſtandard of 11 deniers: the allowances were fixed at 36 grains per marc for the remedy of the mint in reſpect to weight, and to 3 grains of fine ſilver for a ſimilar remedy in reſpect to fineneſs. The numeral value of the ſame crown was at firſt 5 livres tournois; but, by an edict of the 26th of May following, it was extended to 6 livres.

According to the edict referred to, a marc containing 11 parts of fine ſilver and 1 of alloy, and weighing 4608 grains of France, was to be coined into 8$\frac{3}{10}$ crowns of 6 livres. Upon this footing the weight of a crown ought to have been 555$\frac{15}{83}$ grains $\frac{11}{12}$ fine. As, however, the difficulty was anticipated of coining pieces with rigorous exactneſs in reſpect to a ſpecific weight, an allowance of 36 grains per marc was fixed, at the ſame time, under the denomination of the remedy of the weight, which, if carried to its utmoſt extent, would have reduced the marc of ſilver to 4572 effective grains, and the crown to 550$\frac{70}{83}$ grains; whence it follows that the maximum of the weight of the crown was $555\frac{15}{83}$ grains, and the minimum $550\frac{70}{83}$ grains. Thus, every crown iſſued into circulation by the different farmers of the mint, not weighing leſs than the minimum, was reputed to be of the weight fixed by the law as a maximum.

In like manner, as it is difficult to coin pieces of metal of an abſolute degree of ſpecific fineneſs, the government fixed another allowance of 3 grains of fine ſilver, under the denomination of the remedy of the alloy; ſo that every piece being of a ſtandard of not leſs than 10 deniers 21 grains, was reputed to be of the full ſtandard of 11 deniers.

It will be eaſily conceived, that the farmers of the mint, with a view to profit as much as poſſible by their undertaking, would reduce the weight and the ſtandard of the crowns to the neareſt degree of approximation at which the coins might be ſtruck, without the riſk of deficiency either in weight or in ſtandard.

Thus it is that the general coinage of the pieces in queſtion was admitted upon the footing of $8\frac{3}{10}$ crowns from the maſs of a marc reduced to 4578 grains of the ſtandard of 10 deniers $21\frac{1}{2}$ grains of fine ſilver, or a little more or leſs; that is, that the farmers of the mint availed themſelves of an effective toleration of 30 grains in 36, as a remedy of weight; and of a ſimilar toleration of $2\frac{1}{2}$ grains of fine ſilver in 3 grains, as a remedy of alloy. Hence the French crown of 6 livres would be equivalent with $551\frac{47}{83}$ effective grains of France, correſponding with $452\frac{1}{2}$ grains troy-weight of England; and its ſtandard, according to Engliſh computation, would be, as I have already pointed out, 10 ounces 18 pennyweights.

Such having been the principle not only of the coinage of the crowns in France, but alſo of the louis d'or, and of a great number of the coins of other countries, it will be readily conceived that not any particular aſſays, either in reſpect to weight or to ſtandard, of any piece whatever, being ſubject to the variations referred to, can poſſibly poſſeſs that degree of exactneſs which reſults from the examination of the coinage of a country in the aggregate; and that the pars of exchange which I have determined under the preceding head, and which embrace the conſideration of the remedies of weight and of alloy, could not be brought to a greater degree of preciſion, and would not, probably, afford reſults equally correct, if the weight and the ſtandard of the effective pieces, which are the baſis of the reſearch, were deemed correct as the ſpecial conſequence of any particular aſſay.

Independently of the monies of account, and of the ſeveral denominations of ſpecie, there are, in certain ſtates, monies of exchange, to which, as well as to the monies of account, the qualifying epithet has been applied of *imaginary* monies. This appellation, however, does not convey an adequate notion of what is commonly underſtood by the ſeveral denominations of monies of account, and of monies of exchange. The ſubject may be explained as follows: the pound ſterling of England, the livre tournois of France, the florin of Holland, the pound banco of Pruſſia, the lira fuori di banco of Genoa, the livres current in other ſtates; in a word, all the monies of account in uſe in Europe, if they be not of the identical value of ſome one of effective coins of gold or of ſilver which are reſpectively in circulation in the ſame ſtates, do, in fact, repreſent determinate fractions, and, in many caſes, aliquot parts of ſuch denomination of ſpecie, at the ſame time that they alſo repreſent exact multiples of ſome other money of the ſame country, either of ſilver or of copper. Each of the parts compoſing the monies of account are, therefore, of the identical value of the correſponding parts which compoſe the real monies. Thus, the reality of the pound ſterling exiſts in the $\frac{20}{21}$ of a guinea, or in the reunion of 4 crowns, or of 20 ſhillings. The reality of the livre tournois exiſts as an aliquot part of the louis d'or or of the French crown, and in the reunion of 20 ſols effective money.

Certain monies of exchange may be of the identical value of certain monies of account in the ſame country, and poſſeſs, in conſequence, a determined relation of value to the real monies. But, if there be not any ſuch identity of value, and that the monies of exchange be not preciſely equivalent with any effective money, or with any money of account, they will nevertheleſs be found to denote certain determinable quantities of the latter. Thus, in Spain, the reality of the dollar of exchange exiſts in the reunion of 8 reals of plate; and, in Portugal, the milreis contains $2\frac{1}{2}$ effective cruſades of gold, called *cruzados velhos*, each of which is equivalent with the cruſade of exchange of 400 reis.

Whatever be the point of view, therefore, under which we may conſider the monies of account and the monies of exchange, there exiſts in every country where they are in uſe an intimate and direct relation between each of ſuch monies and the real monies properly ſo called; whence it may be inferred, that the pound ſterling, the livre tournois, and any other money of account or of exchange, cannot ſtrictly be denominated imaginary monies.

The deſcription of the monies, weights, and meaſures of different countries has occupied the attention of many men of learning, ſeveral of whom have thoroughly treated of theſe ſubjects. Among their reſpective works, however, there is not any which equals in exactneſs and method that under the title of the *Hamburguiſcher Kontoriſt*, by the celebrated Kruſe, who, whenever he could not verify by himſelf that which he was deſcribing, judiciouſly referred to the original works compoſed in the countries themſelves, whoſe coinage, or the relative ſubjects, were under conſideration.

The merit of the work in queſtion was ſoon appreciated. The *Traité Général de Commerce*, by Samuel Ricard, to which I have referred in the Merchant's Aſſiſtant, having been republiſhed at Amſterdam, in 1781, by Marien, upon a new plan, he ſubſtituted the deſcriptions and the tables of the weights and meaſures, inſerted in the Hamburgh Kontoriſt, to thoſe adopted by Ricard, and the former were afterwards copied into the *Encyclopedie Methodique* of France. The correctneſs of the ſyſtem of Kruſe was alſo aſcertained by Gerhardt, of Berlin, who was himſelf known by excellent works upon commerce. Marien afterwards introduced it into Spain, in his *Tratado General de Monedas*, &c., printed at Madrid in 1789, as he acknowledges in his preface to that work. In a word, if we except a few errors in the original work, which were in a great meaſure corrected by Marien, and ſome alterations made by the latter in conſequence of actual aſſays by Tillet, of the Academy of Sciences at Paris, the Hamburgh Kontoriſt is become the ſtandard work of the commercial nations upon the continent.

By introducing, therefore, into England, whoſe greatneſs and power are inherent in her commerce, a ſyſtem of monies, weights, and meaſures, thus generally adopted, I indulge a hope that it cannot fail of being favourably received, and that it will take precedence of the tables hitherto publiſhed, and which are of as little practical uſe in accompting houſes, as they are erroneous and incomplete in their compoſition.

It will be ſeen, however, that I have not ſervilely copied the work in queſtion; for, independently of the introduction of a new ſyſtem of monies, weights, and meaſures, into France, ſince the revolution in that country, recent works have appeared, containing the moſt circumſtantial details upon the metrology of the countries in which they have been publiſhed: ſuch, among others, are the *Dictionnaire Univerſel de la Geographie Commerçante,* by Peuchet, an 8; and *El Guia de Commerciantes,* publiſhed annually in Spain, by order of government.

To conclude: the deſcription of the monies, weights, and meaſures, of the ſeveral commercial nations of the world, which is the ſubject of this part of my work, is founded, as well as the tables of compariſon which will be found under the next head, upon the *Hamburguiſcher Kontoriſt* of Kruſe, and upon *El Tratado General* of Marien. I ſhould add, however, that, in performing my calculations with reference to thoſe works, I have adopted the corrections made by Marien, and detected ſuch errors of the preſs as had occurred;

that, after having ſuppreſſed certain articles which would be no longer uſeful, I have corrected or added ſeveral others from other unqueſtionable authorities, whom it would be tedious to enumerate; and, laſtly, that, having reviſed all my calculations by the help of logarithms, I have not omitted any means of preſenting to the public a ſyſtem of monies, weights, and meaſures, adapted to England, which, I truſt, will be found to poſſeſs all the conciſeneſs, method, and exactneſs, to be expected in a work of this kind.

ENGLAND.

Accounts are kept in England in pounds ſterling, each conſiſting of 20 ſhillings, and each ſhilling of 12 pence.

The principal coins of this kingdom are as follows:

Of gold: the guinea of 21 ſhillings; the half guinea of 10 ſhillings and 6 pence; the third of a guinea, or ſeven ſhilling piece.

Of ſilver: the crown of 5 ſhillings; the half crown of 2 ſhillings and 6 pence; the ſhilling of 12 pence; the ſixpenny piece.

Of copper: the penny of 4 farthings; the halfpenny of 2 farthings; the farthing of a quarter of a penny.

The pound, troy-weight, conſiſts of 12 ounces, the ounce of 20 pennyweights, and the pennyweight of 24 grains; whence the pound contains 5760 grains, and the ounce 480 grains.

The imaginary unit of reference in the aſſaying of gold, which may be indifferently called a pound or an ounce, is divided into 24 carats, and each carat into 4 grains, whoſe fractions have not any ſpecific denomination.

The ounce of ſtandard gold conſiſts of 22 carats, and is worth 3 pounds 17 ſhillings 10½ pence ſterling.

The imaginary unit in the aſſaying of ſilver is divided into 12 ounces, and the ounce into 20 pennyweights.

Standard ſilver conſiſts of 11 ounces 2 pennyweights, and is worth 5 ſhillings and 2 pence ſterling.

The coinage of gold and ſilver is regulated as follows:

A pound of ſtandard gold, troy-weight, is coined into 44½ guineas; and a pound of ſtandard ſilver, alſo of troy-weight, is coined into 12⅖ crowns, or 62 ſhillings; and the other coins in the ſame proportion.

The charges of coinage, which amount to $\frac{7}{10}$ per cent upon gold, and to $2\frac{7}{32}$ per cent upon ſilver, are defrayed by government; ſo that thoſe who take to the Tower of London, which is the only public mint in the kingdom, bullion of the ſtandard required, receive in exchange for an ounce of gold £3 17 10½, which is paid, as nearly as the ſum admits, in gold coin; and, in exchange for an ounce of ſilver, 62 pence, that is, five ſhillings in ſilver coin, and two pence in copper coin: in fact, if the whole of thoſe ſums could be paid in gold and ſilver reſpectively, it would be found that each would contain an ounce of ſtandard metal.

The proportion between gold and ſilver is in England as 1 to $15\frac{5}{24}$.

Apothecaries make uſe of the pound troy-weight, which they divide into 12 ounces, 96 drams, 288 ſcruples, or 5760 grains.

The ounce for weighing diamonds and pearls is divided into 150 carats, and each carat into 4 grains.

The pound avoir du poids, which is uſed for weighing almoſt every deſcription of merchandize, is divided into 16 ounces, 256 drams, 1024 quarters, and is equivalent to 7000 grains troy-weight; wherefore 144 pounds avoir du poids make 175 pounds troy-weight.

The ton is 20 hundred weight, 80 quarters, and 2240 pounds avoirdupois, and the hundred weight is therefore compoſed of 4 quarters, or 112 pounds.

The ton, or fodder of lead, uſed at London and at Hull, weighs 19½ hundred weight, but, when in ſheets, it conſiſts of 20 hundred. The ton at Newcaſtle weighs 24 hundred, and that at Scarborough 22.

A laſt of wool is compoſed of 12 ſacks, 24 weys, 156 tods, 312 ſtone, 624 cloves, or 4368 pounds.

A laſt of corn and of ſalt meaſures 1⅔ wey, 10 quarters, 20 cooms, 40 ſtrikes, 80 buſhels, 320 pecks, 640 gallons, 1280 pottles, 2560 quarts, or 5120 pints. The quarter conſiſts of 8 buſhels; and, by an act of parliament paſſed in 1712, it ſhould contain 2178 cubic inches.

The ton of pit coal conſiſts at London of 12 ſcore, or 240 canneſters, and is equivalent to 2 keel, or 16 chaldron, Newcaſtle meaſure.

A ſtone of fiſh is 8 lbs; of glaſs 5 lbs; and a ſtone of hay, iron, ſhot, &c., and horſeman's weight, 14 lbs.

A tun of wine, of brandy, and of other liquids, contains 2 pipes, 4 hogſheads, 6 tierces, 8 barrels, 14 rundlets or kilderkins, 252 gallons, 504 pottles, 1008 quarts, or 2016 pints.

A gallon meaſures 231 cubic inches.

All vegetable oil is ſold by the tun of 236 gallons, but all animal oil by the tun of 252 gallons.

A laſt of ale is compoſed of 8 hogſheads, 12 barrels, 24 kilderkins, 48 firkins, 384 gallons, 768 pottles, 1536 quarts, or 3072 pints. The ſame meaſures compoſe a laſt of herrings and of ſoap.

A tun of beer contains 2 butts, 4 hogſheads, 6 barrels, 12 kilderkins, 24 firkins, 216 gallons, 432 pottles, or 1728 pints. A gallon meaſures 282 cubic inches; wherefore

77 beer gallons make 94 wine gallons.

Two meaſures are uſed in England for cloths, ſtuffs, and linens. The ell, of the length of 1¼ yard, or 45 inches; and the yard of 3 feet, or 36 inches.

A foot is 12 inches, or 144 lines.

An acre of land is 4 ſquare roods, 160 ſquare poles, or 4840 ſquare yards.

A mile is divided into 8 furlongs, 1760 yards, or 5280 feet.

A furlong is divided into 40 poles, 110 fathoms, 132 paces, 220 yards, 660 feet, 880 ſpans, 2640 palms, or 7920 inches.

A marine league is 3 miles, and 20 leagues or 60 miles compoſe a degree.

ACHEM.

In this kingdom, ſituated in the iſland of Sumatra, accounts are kept in taels or tayels, each conſiſting of 4 pardos, and each pardo of 4 maces. A tayel is alſo divided into 64 coopangs, and is equivalent to 25600 caſh.

The candil, weight for rough goods, conſiſts of 200 cattis, and each catti is compoſed of 20 boncals, 100 tayels, 280 pagodas, 320 maxans, 1600 maces, or 6400 coopangs.

Gold duſt of the purity of $9\frac{1}{4}$ touch, which are equivalent with $22\frac{1}{5}$ carats, is ſold by the boncal; each being worth 7 gold tayels, money of account, 5 of which are equal to 4 tayels currency.

ACRE.

In this city of Syria, accounts are kept in piaſtres of 80 aſpers.

The cantaro is compoſed of 100 rotolos. A rotolo of cotton renders at Leghorn $6\frac{1}{2}$ lbs, which are equivalent to $4\frac{37}{40}$ lbs of England.

The ardep, or meaſure for rice, renders at Leghorn 750 lbs, equivalent to $568\frac{3}{8}$ lbs of England.

AIX LA CHAPELLE,

Formerly a free imperial city, and now chief city of the department of Roer, in France. Accounts are kept in *reichſthalers* or rixdollars currency, each rixdollar conſiſting of 54 marcs, and each marc of 6 buſches currency.

An effective rixdollar is 72 marcs, and a ſchlecht-thaler is only 26 marcs.

The following is the relation between the ſeveral monies of this city.

1 effective rixdollar is equivalent to 1⅓ rixdollar currency, 2 reichs-guldens, $2\frac{10}{13}$ ſchlecht-thalers, 8 ſhillings, 12 guldens, 72 marcs, 432 buſches, 1728 hellers.

The coins of this city are as follow:

Of gold: the ducat of 3⅓ rixdollars currency.

Of ſilver: the raths-præſentger of 16 marcs; there are alſo double and half pieces of that name, and of proportionate value.

Of ſilver and copper: pieces of 3, 2, and 1 marc.

Of copper: pieces of 3 and 1 buſch, or of 12 and 4 hellers.

The ſchipfund, commercial weight, conſiſts of 3 centners, the centner of 100 pounds; but the ſchipfund which is uſed in reſpect to the carriage of goods is 318 pounds.

The pound is divided into 2 marcs, 16 ounces, 32 loths, 128 quintins, or 512 pfenings.

A malter of corn is 6 fas. A fas of wheat contains 4 kops, and that of oats 6 kops.

An ahm of wine meaſures 130 kanns.

ALGIERS.

In this ſtate of Barbary, accounts are kept as follow:

In ſaimes, or doblas, of 50 aſpers.

In patacas chicas, or patacas of aſpers; each pataca conſiſting of 8 teminas, or 232 aſpers.

The coins of Algiers are as follow:

The pataca gouda or gorda, of 3 patacas chicas; the temina of 29 aſpers; the caruba of 14 aſpers.

The ſultanin of Turkey is worth about 8½ patacas chicas, and the ſequin of the ſame country 10. The joaneſe, which the Algerines call *carota*, is worth about 4½ ſultanins; and the hard dollar is ſold from 4¾ to 4⅞ patacas chicas.

The *cantaro* or quintal conſiſts of 200 rotolos; but the cantaro for weighing figs, raiſins, butter, honey, dates, oil, and ſoap, is compoſed of 166 rotolos; that for iron, lead, thread, and wool, of 150; that for almonds, cheeſe, and cotton, of 110; and, laſtly, that for bronze, copper, wax, and drugs, of 100.

The rotolo is divided into 16 ounces.

The mitigal, for weighing diamonds, pearls, gold, and ſilver, is about 72 grains troy-weight.

A caffiſe of corn contains 16 terries.

The pik, or pico Turco, cloth meaſure, is divided into 8 robi; and the pik, or pico Moro, is uſed for meaſuring linen. 100 picos Moros correſpond with 75 picos Turcos.

ALEPPO.

In this as well as in other cities of Syria, accounts are kept in piaſtres of 80 aſpers. The piaſtre is alſo divided into 24 ſyainos.

A Spaniſh dollar being worth 2 piaſtres, more or leſs, a piaſtre is, therefore, of the value of about 2 ſhillings 3 pence ſterling.

The cantaro, or weight for rough goods, which is equivalent with the cantaro of Tripoli, conſiſts of 100 rotolos, and each rotolo of 12 ounces or 720 drams.

The zurlo is compoſed of 27½ rotolos.

The rotolo, uſed for weighing the ſilks of Tripoli and Antioch, as well as thoſe denominated Barutinas, Payaſes, Beduinas, and Beiledinas, is compoſed of 700 drams; and the rotolo for weighing the ſilks of Perſia, and thoſe denominated Cerbaſſis, Burmas, Ardaſſas, and Ardaſſetas, is compoſed of 680 drams.

There are other weights in Syria: the cola, conſiſting of 7 veſnos; each veſno of 5 rotolos or 200 drams. The batman, conſiſting of 6 okas, each oka of 400 drams.

The metical, uſed for weighing diamonds and pearls, is 1½ dram.

ALEXANDRIA.

In this city, and in all Egypt, accounts are kept in piaſtres, each piaſtre conſiſting of 33 medins, and each medin of 8 borbos, or 6 forlos. A medin is worth 3 aſpers.

A Spaniſh dollar being worth 76 medins, more or leſs, a piaſtre is, therefore, of the value of about 2 ſhillings ſterling.

The coins of Egypt are the ducatelo of 10 medins, the griſcio or abuquepe of 30 medins, and the zinzerlo of 107 medins.

The monies of Turkey are alſo received in Egypt as currency; that is, the ſequin fundukli for 126 medins, and the ſequin zaramabuc for 110 medins.

The cantaro is compoſed of 100 rotolos; and there are ſeveral ſorts of rotolos, known by the denomination of forforo, zaydino, zauro, and mina.

The oka conſiſts of 200 drams, each dram of 16 kirates, or 64 grains.

Corn is meaſured either by the rebebe or the kizloz.

ALICANTE.

Accounts are kept in libras or peſos, each libra conſiſting of 20 ſueldos, and each ſueldo of 12 dineros.

The libra conſiſts of 10 reals of Alicante; and as it is equal to the dollar of exchange, the real of Alicante is worth 51⅕ maravedis of vellon.

The proportion between the coins of Alicante and thoſe of Caſtille is as follows:

375 libras of Alicante make	272 ducats of exchange
75 libras of Alicante	68 ducats of Alicante
4 ducats of exchange ...	5 ducats ditto
4 reals of plate	5 reals ditto
128 reals of vellon	85 reals ditto.

The carga conſiſts of 2½ quintals or 10 arrobas Valencianas. The quintal is compoſed of 4 arrobas, and each arroba of 24 libras mayores, 36 libras menores, 30 libras of 14 ounces each, or 27 libras of 16 ounces each.

The libra mayor, for weighing fruit, is 18 ounces of Valencia.

The libra menor is 12 ounces of Valencia, and ſerves for weighing almoſt every deſcription of merchandize.

The libra caſtellana of 16 ounces is uſed in reſpect to the payment of duties.

31 ounces of Valencia make 32 ounces of Caſtille.

The cahiz or caffiſe conſiſts of 12 barchillas, each of 4 celemines, or 8 half celemines, the half celemine of 2 quartillas. 100 fanegas of Caſtille are equal to 22 2/9 cahices of Alicante.

The cantara, meaſure for liquids, correſponds with 21 quartillos of Caſtille, more or leſs.

The tonelada is 2 pipas, 80 arrobas, 100 cantaras. The pipa contains 50 cantaras, which make 44½ arrobas menores of 25 libras of Caſtille.

The vara is divided into 4 palmos, and 100 varas of Alicante are equal to 101 varas of Caſtille.

AMSTERDAM.

In this, and in the other cities of Holland, accounts are kept in *guldens* or florins, each conſiſting of 20 ſtivers, and each ſtiver of 16 pennings.

The *pond Flaams*, or pound Flemiſh, conſiſts of 6 florins, 20 ſhillings, 120 ſtivers, or 240 grotes.

The *goud-gulden*, or gold florin, by which the price of corn is regulated in Holland, is worth 1⅖ florins, or 28 ſtivers; whence 5 gold florins are equal to 7 florins current.

There are both current money and bank money.

The current money chiefly conſiſts of the following coins:

Of gold: the ryder or reyder of 14 florins; the half ryder of 7 florins; and the ducat of 5¼ florins. The ducat is not, however, a coin iſſued by the ſtate, and its value is ſubject to variations.

Of ſilver: the *ducaton* or ducatoon of 3 florins 3 ſtivers; the piece of 3 florins; the rixdaler of 2 florins 10 ſtivers; the daler or dalder of 30 ſtivers; and the florin of 20 ſtivers.

Of ſilver and copper: the ſhilling of 6 ſtivers; the ſeſthalve of 5½ ſtivers; the dubbeltje of 2 ſtivers; the ſtiver of 16 pennings.

Of copper: the duyten of 2 pennings.

The Bank of Amſterdam keeps its accounts in bank money, and receives the following coins in depoſit at the under mentioned prices:

The ducat of Holland for 4 florins 19 ſtivers 8 pennings banco; the old louis d'or of France for 8 florins 14 ſtivers; the ducaton for 3 florins; the rixdaler for 2 florins 8 ſtivers; the Spaniſh doubloon, of the coinage previouſly to 1772, for 22 florins; and the new doubloon for 21 florins 10 ſtivers.

The Bank alſo receives effective florins, with an equal quantity of ryders, under the deduction of $4\frac{7}{8}$ per cent, which difference denotes the proportion between bank money and current money.

The marc, denominated troy-weight, which is uſed for weighing precious metals, conſiſts of 8 ounces, 160 engels or eſtelins, and 5120 as.

In the aſſaying of gold, the marc is divided into 24 carats, the carat into 12 grains.

In the aſſaying of ſilver, the marc is divided into 12 pennyweights, the pennyweight into 24 grains.

The coinage of gold and ſilver is regulated as follows:

A marc of gold of the purity of 22 carats and 1 grain, incluſive of $\frac{3}{4}$ of an eſtelin for the remedy of the weight, and 1 grain for the remedy of the alloy, is coined into $24\frac{8}{13}$ ryders, or $49\frac{3}{13}$ half ryders, each ryder being worth 14 florins; but as the charges of coinage, which amount to 1 per cent, are deducted, the intrinſic value of a ryder is only 13 florins 17 ſtivers 6 pennings.

A marc of ſilver of the purity of 11 pennyweights and 7 grains, incluſive of 1 eſtelin for the remedy of the weight, and 1 grain for the remedy of the alloy, is coined into $7\frac{8599}{16943}$, or very nearly $7\frac{1}{2}$ ducatons. Thus, the marc is worth 23 florins 13 ſtivers; but as the charges of coinage, which amount to $\frac{1}{6}$ per cent, are deducted, the intrinſic value of the marc is only 23 florins 7 ſtivers and 11 pennings.

A marc of ſilver of the purity of 10 pennyweights and 11 grains, incluſive of 1 eſtelin for the remedy of the weight, and 1 grain for the remedy of the alloy, is coined into $8\frac{2072}{2921}$, or very nearly $8\frac{7}{9}$ rixdalers; and a marc of 11 pennyweights 1 grain fine, incluſive of ſimilar remedies, is coined into $7\frac{24149}{32893}$, or very nearly $7\frac{3}{4}$ pieces of 3 florins, called in Holland *ſtaten gulden*, or ſtate florin.

And, laſtly, a marc of ſilver of the purity of 11 pennyweights, incluſive of 1 eſtelin for the remedy of the weight, and $1\frac{1}{2}$ grain for the remedy of the alloy, is coined into $23\frac{151}{823}$, or very nearly $23\frac{1}{5}$ florins, the charges of coinage being $1\frac{2}{5}$ per cent.

The proportion between gold and ſilver is, in Holland, as 1 to $14\frac{33}{40}$.

The marc troy-weight, for weighing diamonds and pearls, conſiſts of 160 eſtelins, or 1200 carats; the eſtelin of $7\frac{1}{2}$ carats; and the carat is divided into $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$, $\frac{1}{32}$, $\frac{1}{64}$ parts.

Apothecaries make uſe of two ſorts of weights. They divide the pound called arſenic weight into 16 ounces, the ounce into 8 drams, the dram into 8 ſcruples, and the ſcruple into 20 grains.

The pound, apothecary weight, conſiſts of 12 ounces, or 24 looten; whence 3 pounds arſenic weight are equal to 4 pounds apothecary weight.

The pound, commercial weight, ſhould be 2 marcs, or 10240 as, troy-weight; but it weighs 10280 as; whence 256 pounds of Amſterdam are equal to 257 pounds troy-weight at the ſame place.

The ſchippondt conſiſts of 3 *centenaar* or quintals, 20 liſponds, or 300 pounds; the liſpond is 15 pounds, and the *ſteen* or ſtone 8 pounds.

A laſt of corn is compoſed of 27 muddes, 36 ſacks, 108 ſcheepels or aggelen, 432 vierdevats, 3456 kops.

A *tonne* or barrel of corn meaſures 4 ſcheepels, or 160 kops.

The laſt of Amſterdam is uſed in the other cities of Holland, but in ſome of them it is divided as follows:

At *Hoorn*, *Eenkhuyſen*, *Muyden*, *Narden*, and *Weeſp*, into 22 muddes, 44 ſacks, 88 ſcheepels, or 352 taakels.

At *Haarlem*, into 38 ſacks.

At *Rotterdam*, *Delſt*, and *Schiedam*, into $2\frac{23}{32}$ hoedts; the hoedt into $10\frac{2}{3}$ ſacks, or 32 achtendeelen.

At *Alckmaar*, into 32 ſacks.

At *Gouda*, into $2\frac{2}{5}$ hoedts; the hoedt into $10\frac{2}{3}$ ſacks, or 32 ſcheepels.

At *Dordrecht*, into 3 hoedts, 24 ſacks or vaaten, or 96 achtendeelen.

At *Gorcum*, into 2 hoedens, and 5 achtendeelen.

At *Breda*, into $33\frac{1}{2}$ viertelen of wheat, or 29 viertelen of oats.

At *Utrecht*, into 25 muddes.

At *Amersfort*, into 64 ſcheepels.

At *Middleburgh*, into $41\frac{1}{2}$ ſacks, or 83 achtendeelen.

At *Fluſhing* and *Ter-Veer*, into 39 ſacks.

At *Zirkzee*, *Ter-Goes*, *Bommen*, *Ter-Toolen*, *Stavenes*, and *Duyveland*, into $37\frac{1}{2}$ ſacks.

At *Groningen*, into 33 muddes.

At *Deventer*, into 36 muddes, or 144 ſcheepels.

And in *Frieſland*, in 18 barrels, 33 muddes, or 36 loopers.

A hondert of ſalt conſiſts of 404 maaten, and weighs 40000 pounds of Amſterdam.

A hoedt of pit coal is 38 maaten.

An ahm or aam of gin is compoſed of 4 ankers, 8 ſtekanen, 21 viertels, 64 ſtoopen, 128 mingelen, or 256 pints.

The *tonne* or barrel of beer contains 128 mingelen.

The oxhooft conſiſts of $12\frac{1}{2}$ ſtekanen, or 200 mingelen.

The foot conſiſts of 4 palms, or 11 inches; the inch is divided into 24 parts.

The palm, which is uſed for meaſuring timber and maſts, is 42 lines of France, or very nearly $44\frac{3}{4}$ lines of England; and its diameter is 14 lines of France, or very nearly $14\frac{11}{12}$ lines of England.

The morgen, land meaſure, conſiſts of 600 ruthes, and the ruthe is 13 feet of Amſterdam.

ANCONA.

Accounts are kept at Ancona in ſcudi, each ſcudo conſiſting of 20 ſoldi, and each ſoldo of 12 denari; they are alſo kept in ſcudi of 10 paoli, the paolo of 10 bajocchi; and ſometimes in ſcudi of 100 bajocchi.

The following is the relation of theſe monies.

1 ſcudo is equivalent to 10 paoli, 20 ſoldi, 80 bolognini, 100 bajocchi, 240 denari.

All the coins of Rome are current at Ancona, without any difference either in their name or their value.

The weight uſed in this city is 2 per cent lighter than that of Leghorn.

The rubbo, meaſure for corn, is 8 lappe; and the ſoma, meaſure for liquids, is 8 boccali.

ANTWERP.

At Antwerp, Bruſſels, and in the late ſtates of Brabant and Flanders, accounts are kept in *guldens* or florins, each florin conſiſting of 20 patars, and each patar of 12 pennings.

A pound Flemiſh, or *pond Vlaams,* is $2\frac{1}{2}$ rixdollars, 6 florins, 20 ſhillings, 120 patars or ſtivers, 240 grotes, 1920 pennings, or 5760 mytens.

Theſe monies are diſtinguiſhed by the appellation of exchange money and current money, the former being $16\frac{2}{3}$ per cent better than the latter; whence 6 florins exchange money make 7 florins current money.

The coins of the Auſtrian Netherlands were as follow:

Of gold: the ſouverain, or ſeverin, of $8\frac{1}{4}$ florins of exchange, or $9\frac{5}{8}$ florins currency; the double and the half ſouverain, in the ſame proportion; the Auſtrian ducat of $5\frac{9}{20}$ florins of exchange, or $6\frac{7}{20}$ florins currency.

Of ſilver: the *ducaton,* or ducatoon, of $3\frac{1}{20}$ florins of exchange, or 3 florins $11\frac{1}{2}$ patars ourrency; the *croon,* or crown, of $2\frac{7}{10}$ florins of exchange, or $3\frac{3}{20}$ florins currency.

Of ſilver and copper: the new ſhilling of 6 patars of exchange, or 7 patars currency; the old ſhilling of $6\frac{3}{4}$ current patars; the pieces of 5, $2\frac{1}{2}$, and 1 current patar; and the plaquette of $3\frac{1}{2}$ current patars.

Of copper: the pieces of 2 and 1 orts; and the duyte of 2 pennings currency.

The marc, for weighing precious metals, conſiſts of 8 ounces, the ounce of 8 eſtelins or engels, and the eſtelin of 32 as; whence the marc, which is equal to that of Amſterdam, and has the ſame denomination of troy-weight, is 5120 as.

In the aſſaying of gold, the marc is divided into 24 carats, the carat into 12 grains; and in the aſſaying of ſilver, into 12 penningen, or pennyweights, each into 24 grains.

A marc of gold of the purity of $22\frac{3}{4}$ carats, incluſive of $\frac{3}{4}$ of an eſtelin for the remedy of the weight, and of $\frac{3}{4}$ of a grain for the remedy of the alloy, was coined into $44\frac{932}{5733}$ ſouverains, and the other coins founded upon that denomination in the ſame proportion.

A marc of ſilver of the purity of 10 pennyweights and $11\frac{1}{2}$ grains, incluſive of 1 eſtelin for the remedy of the weight, and of 1 grain for the remedy of the alloy, was coined into $7\frac{7}{20}$ ducatons.

A marc of ſilver of the purity of 6 pennyweights and $23\frac{1}{2}$ grains, incluſive of $1\frac{1}{2}$ eſtelin for the remedy of the weight, and of $1\frac{1}{2}$ grain for the remedy of the alloy, was coined into $49\frac{5}{96}$ ſhillings Flemiſh.

The pound conſiſts of 2 marcs, or 16 ounces; but each marc is $4\frac{3}{5}$ per cent lighter than that which is uſed for weighing precious metals.

The ſchippondt is compoſed of 3 centners, or 300 pounds; the *centner*, or quintal, is 100 pounds; the *ſteen*, or ſtone, 8; the wagge, 165; and the load 400.

A viertel of corn meaſures 4 muckes.

The laſt of Amſterdam is about $37\frac{6}{7}$ viertels of Antwerp, or 25 ſacks of Bruſſels.

A pipe of wine contains 152 ſtoopens; the aam 50; and a barrel of beer 54.

ARRAGON.

At Saragoſſa, and in the other parts of this titular kingdom, accounts are kept in libras jaqueſas, each libra conſiſting of 20 ſueldos, and each ſueldo of 16 dineros of plate. The libra is compoſed of 10 reals of old plate, and is therefore worth 18 reals and 28 maravedis, or 640 maravedis of vellon: thus, the ſueldo is 8 quartos, and the dinero 1 ochavo, or 2 maravedis of vellon.

16 hard dollars correſpond with	17 libras jaqueſas
5 piſtoles of exchange	16 ditto
5 dollars of exchange	4 ditto
68 ducats of exchange	75 ditto
4 doubloons	68 ditto.

The libra, or pound penſil, weight for rough goods, conſiſts of 12 ounces; and the libra uſed for weighing meat and fiſh is compoſed of 36 ounces.

The quintal conſiſts of 4 arrobas, or 144 pounds of Arragon, equivalent to 108 pounds of Caſtille; and the arroba is 36 pounds of 12 ounces each, or 27 pounds of Caſtille.

A cahiz of corn conſiſts of 8 fanegas, 24 quartales, 96 almudes or celemines. The fanega is 12 celemines, and is equivalent with 4$\frac{15}{16}$ celemines of Caſtille; whence 79 fanegas of Caſtille make 192 fanegas of Arragon.

The nietro, or carga of wine, of Arragon, conſiſts of 16 cantaras; each cantara, or arroba, is 28 pounds of Arragon, or 21 pounds of Caſtille.

17 cantaras of Arragon are 84 azumbres of Caſtille.

The vara of Arragon is 398 lines of Caſtille.

AUGSBURGH.

Accounts are kept in guldens of 60 kreutzers, or cruitzers, the cruitzer of 4 pfenings.

The *thaler*, or rixdollar, is 1$\frac{1}{2}$ gulden, or 90 cruitzers.

The gulden is alſo divided into 15 batzes, or 20 kayſergroſchen; and the batze is 1⅓ kayſergroſchen, 4 cruitzers, or 16 pfenings.

Theſe monies are diſtinguiſhed into exchange money, current money, and *weiſſe muntzen*, or white money.

The current money, which is the ſame as that denominated *convention*, is 27 per cent leſs than exchange money, in which bills of exchange are paid; and 20 per cent more than white money, which is itſelf to exchange money as 100 are to 47⅗.

The coins of Augſburgh are as follow:

Of gold: the ducat, which is worth 4 guldens 12 cruitzers current money, with an agio of 3 or 4 per cent; the gold gulden of 3 guldens current money.

Of ſilver: the reichſthaler eſpecie de conſtitution, of 2 guldens 12 cruitzers; and the reichſthaler eſpecie de convention, of 2 guldens, the whole in current money.

Of ſilver and copper: the gulden of 60 cruitzers; the half gulden of 30 cruitzers; and the pieces of 20, 15, 12, 10, 7½, 5, 4, 3, 2½, 2, and 1 cruitzer, white money.

The marc, for weighing precious metals, conſiſts of 16 loths, 64 quintins, or 256 pfenings, and is 1 per cent heavier than that of Cologne.

487 marcs of Amſterdam make 507⅝ marcs of Augſburgh.

In the aſſaying of gold, the marc is divided into 24 *karatten* or carats, and each carat into 12 grains.

In the aſſaying of ſilver, the marc conſiſts of 16 loths, each loth of 4 quintins, or 16 pfenings.

Gold and ſilver are ſold at ſo many current guldens per marc fine of Augſburgh.

The *centner* or quintal is compoſed of 100 pounds, and there are two ſorts of pounds.

The pound, weight for rough goods, denominated *pfund kramgewicht,* conſiſts of 32 loths, each loth being $\frac{5}{8}$ of a pfening heavier than the loth uſed for weighing precious metals; and $33\frac{1}{4}$ loths of the latter weight compoſe the *pfund frohngewicht,* or pound uſed in reſpect to the cartage of goods; whence 100 pounds commercial weight correſpond with $96\frac{1}{4}$ pounds carriers' weight, and with $200\frac{1}{4}$ marcs, weight for precious metals.

A ſchaf of corn conſiſts of 8 metzes; the metze of 4 vierlings; and the vierling of 16 meeſles.

The fuder is compoſed of 8 jez, 16 muddens, 96 beſons, 768 maas, 1536 ſeidels, 3072 quarters, 6144 achtels.

Two ells are uſed at Augſburgh for meaſuring cloth, and the *fuſs,* or foot, is half of the ſhorteſt.

BARCELONA.

Accounts are kept at Barcelona, and in the other cities of Catalonia, in libras catalanas, each libra conſiſting of 20 ſueldos, and each ſueldo of 12 dineros.

The relation between the libra and all its diviſions is as follows:

1 libra catalana is equivalent to $6\frac{2}{3}$ catalan reals of plate, 10 reals ardites, 20 ſueldos, 240 dineros, 480 mallas; hence 2 catalan reals of plate correſpond with 3 reals ardites.

7 Reales Catalanes are 6 Reales plata

The piſtole of exchange is worth 5 libras 12 ſueldos; the ducat of exchange 38 ſueldos and $7\frac{4}{17}$ dineros; the dollar of exchange 28 ſueldos; the real of plate $3\frac{1}{2}$ ſueldos; and the real of vellon $22\frac{1}{2}$ dineros; wherefore

5 dollars of exchange make	7 libras catalanas
5 piſtoles of exchange	28 ditto
272 ducats of exchange	525 ditto
136 ditto	2625 reals ardites
68 ditto	2625 ſueldos catalanes.

The national coins of Spain are of the under mentioned value in Catalonia:

The doubloon, 30 libras; the hard dollar, $37\frac{1}{2}$ ſueldos; the peſeta Mexicana, 9 ſueldos $4\frac{1}{2}$ dineros; and the peſeta provincial, $7\frac{1}{2}$ ſueldos.

The quintal, weight for rough goods, conſiſts of 4 arrobas, each arroba of 26 pounds of 12 ounces each; whence the quintal is 104 pounds of Catalonia, which correſpond with 91 pounds of Caſtille.

A quartera of corn contains 12 cortanes.

The ſalma is compoſed of 4 quarteras, or 48 cortanes; and the carga of $2\frac{1}{2}$ quarteras, or 30 cortanes.

100 quarteras of Catalonia are 128 fanegas of Caſtille.

The carga, meaſure for liquids, conſiſts of 12 arrobas, each arroba of 26 pounds.

A carga of wine and of brandy meaſures 16 cortanes, 32 quarteras, or 128 quartillos of Catalonia; and a carga of oil is 11 arrobas, 30 cortanes, or 120 quartos.

The regular pipe of wine is 4 cargas, and that of Majorca oil is 110 cortanes.

The cãna catalana is divided into 8 palmos, each palmo into 4 quartos; and 100 varas of Caſtille are equal to $54\frac{1}{3}$ canas of Catalonia.

BASIL OR BASLE.

Accounts are kept in this city of Switzerland in livres, each livre conſiſting of 20 ſols, and each ſol of 12 deniers.

The *reichſthaler*, or rixdollar, is $1\frac{4}{5}$ florins, 3 livres, 27 good batzes, 36 gros, 45 plapperts, 60 ſols, or 108 cruitzers.

The *gulden*, or florin, is $1\frac{2}{3}$ livre, 15 good batzes, 20 gros, or 60 cruitzers.

The livre is 9 good batzes, 12 gros, 20 ſols, or 240 deniers.

The good batze is $1\frac{1}{3}$ gros, 1^{2} plappert, $2\frac{2}{9}$ ſols, 4 cruitzers, 10 rappens, 20 fenins, $26\frac{2}{3}$ deniers.

The coins of Baſle are as follow:

Of gold: the ducat of $4\frac{1}{4}$ florins.

Of ſilver: the rixdollar of 3 livres, or 2 florins; the florin of 15 batzes.

Of ſilver and copper: the pieces of 3, 2, and 1 batze, and of 1 cruitzer.

There are two ſorts of monies: current money, which conſiſts in the effective coins of Switzerland; and exchange money, in thoſe of foreign countries. 3 livres tournois are equivalent to 2 livres exchange money, 9 pieces of which make 10 pieces current money.

The marc of Cologne is uſed at Baſle for weighing precious metals, and the French pound, poids de marc, for rough goods.

A ſack of corn conſiſts of 8 muddes, or ſcheffels; each mudde of 4 kupſleins, or 8 beches.

A ſaum of wine contains 8 ohms; and the ohm 32 old pottles, or 40 new pottles.

Two meaſures are uſed for cloth, the aune and the braſſe; 6 aunes make 13 braſſes.

The juchart, land meaſure, is 140 ſquare ruthes, and the ruthe is 16 feet.

BATAVIA.

Accounts are kept in rixdollars, each rixdollar conſiſting of 60 light ſtivers.

The rixdollar is reckoned 64 ſtivers in reſpect to the payment of ſalary, &c.

The coins of the iſland of Java are as follow:

The pataca of 6 mas, or 24 caſh; the tael of 10 mas, or 40 caſh: the ſatta, or ſanta, is compoſed of 20 caſh; the peku of 1000; the laxſau of 10000; the catty of 100000; the uta of 1 million; the bahar of 10 millions of caſh.

A Japan coopang, ſtamped, is current for 30 rixdollars; a gold ducat for 2 rixdollars 12 ſtivers; a ducatoon for 39 caſh; a rixdollar for 24 caſh; a rupee for 15 caſh; a ſooka for 6 caſh; and a ſattalie for 3 caſh, or doubleſkies.

The caſh is 2 ſtivers, or 2½ light ſtivers.

The bahaar conſiſts of 3 pekuls, or 300 catties, and is equal to 16 Madras maunds 1 vis 24 pollams.

The pekul of 100 catties is 135 pounds avoirdupois.

The tael, for weighing gold, amber, muſk, and bezoar, correſponds with 724 as of Holland, and is about 537 grains troy-weight.

The laſt is 46 meaſures, or 230 gantoms; and the meaſure conſiſts of 5 gantoms.

A leaguer of arrack is 396 ranns, and of wine 360.

An ell is 27 inches, and a foot 12.

BAYONNE.

Accounts are kept in this city of France in francs and cents.

The coins of France are current without any difference either in their denomination or value.

The pound, poids de marc, is uſed at Bayonne.

A ſac of corn is 2 conques.

The muid, liquid meaſure, contains 320 pintes, and the pinte 2 chopines, or 4 demi ſeptiers.

BEETLEFAKEE.

In this city of Arabia, accounts are kept in piaſtres of 80 cabirs or caveers.

Spaniſh dollars are the moſt current coin at Beetlefakee: 100 dollars correſpond with 121½ piaſtres.

The bahaar conſiſts of 40 frazils, or 400 maunds, and weighs 814 pounds troy-weight.

A maund of coffee is two rattles, and a rattle 14½ vakias, 290 of which make a frazil.

The rattle, for all other goods, is 15 vakias; but it is only uſed in the bazar, or market-place.

Cotton is ſold per harrafs, money of account, 9 of which are equal to 11½ Mocha piaſtres.

A tommand of rice is 40 kellas, and weighs 168 pounds avoirdupois.

The gudda, liquid meaſure, is 8 nuſieahs, and the nuſieah is 16 vakias.

A long iron covid is 27 inches, a covid 18, and a guz 25.

BENGAL.

Accounts are kept in current rupees, each rupee conſiſting of 16 current annas, and each anna of 12 current pice.

All ſpecie muſt be reduced into this currency before any ſum can be entered into books of accounts.

A gold mohur, or rupee, weighs 7 dwts 8½ grains troy, and paſſes for 14½ to 15½ ſilver rupees. The moſt common ſilver coin is the rupee denominated ſicca, which weighs 7 dwts 11½ grains, and has the ſame diviſions as the current rupee.

Cowries, or ſea-ſhells, which are made uſe of for paying coolies, are thus reckoned: 4 cowries make 1 gunda; 20 gunda, 1 punn; 32 punns, 1 current rupee; whence 1 rupee is 2560 cowries, which however riſe or fall according to their abundance or ſcarcity.

The relative value of the ſeveral denominations of rupees generally uſed in keeping accounts is as follows:

100 ſicca rupees of Calcutta make 116 current rupees
100 Arcot rupees . . . . 108 ditto
100 Bombay rupees . . . . 110 ditto
100 Sonaut rupees . . . . 111 ditto

A lak is compoſed of 100,000 rupees.

The Bengal factory maund conſiſts of 40 ſeers, and each ſeer of 16 chittacks weighs 1 pound 13 ounces 13⅓ drams avoirdupois, according to the ſtandard received from England in 1787.

The Bengal bazar maund is 10 per cent heavier than that of the factory, and correſponds with 82 pounds 2⅛ ounces avoirdupois.

The relation between the ſeveral denominations of great weights uſed in different parts of India is as follows:

	Bengal Factory.			Avoirdupois.		
	M.	S.	C.	lbs	oz	dr.
A candy of 20 maunds of Madras is	6	23	0	500	0	0
A candy of 150 vis of Pegu	6	28	0	500	0	0
A bahar of 8 capins of Jonkceylon . . .	6	20	0	485	5	5
A bahar of 3 piculs of Malacca	5	16	11	405	0	0
A picul of 50 catties of Siam	1	29	10	129	0	0
A candy of 20 maunds of Anjengo . .	7	20	0	560	0	0
A candy of 20 maunds of Cochin	7	11	0	543	8	0
A candy of 20 maunds of Tellicherry	8	0	2	600	0	0
A candy of 20 maunds of Goa	6	25	2	495	0	0
A candy of 20 maunds of Bombay . .	10	7	2	760	0	0
A candy of 20 maunds of Surat	10	0	0	746	12	0
A maund ſeffy of Buſſorah	1	3	5	90	4	0
A maund á tary of Buſſorah	0	15	$4\frac{1}{3}$	28	3	0
The cuſtom-houſe maund of Muſcat, by which groſs articles are weighed . . .	0	4	11	8	12	0
A bahar of 15 frazell of Mocha	5	33	6	415	0	0
A picul of 100 catties of Canton . . .	1	1	6	133	5	5

A gonge, or a meaſure of rice, is 5 ſeers, and the covid of cloth is 9 inches.

BERGAMO.

In this part of Lombardy, accounts are kept in lire, each lira conſiſting of 20 ſoldi, and each ſoldo of 12 denari, currency.

There are two ſorts of weights; the pound, *peſo ſottile,* of 12 ounces, for weighing ſilks, cochineal, indigo, and grocery; the pound, *peſo forte,* of 30 ounces, for weighing groſs articles.

A ſomma of corn is 8 ſatari; and the brenta, for meaſuring liquids, contains 52 pinti.

BERGEN.

In this city of Norway, accounts are kept in *rykſdales*, or rixdollars, of 6 marcs, each marc of 16 ſkillings Daniſh; but at Chriſtiana, Drontheim, Fleckeren, Koperwick, Laarvig, Romſdal, and in ſome other cities of Norway, the rixdollar is divided into 4 orts, and the ort into 24 ſkillings Daniſh.

All the coins of Denmark are current in Norway, and the deſcription of each is inſerted under the head of Copenhagen.

The ſkipond is 20 liſponds, or 320 pounds.

The centner conſiſts of 6¼ liſponds, or 100 pounds.

The waag, or vog, is 3 biſmerponds, or 36 pounds.

The liſpond is 16 pounds, and the biſmerpond 12.

The *ſkaalpond*, or pound, conſiſts of 32 lods.

A laſt of corn meaſures 12 tœndes, and that of ſalt 18.

A tœnde of corn contains 144 krœge, of ſalt 136, and of pitch 120.

The other meaſures are the ſame as thoſe uſed in Denmark.

Maſts and timber are meaſured by palms, each of which is about 41⅞ lines Engliſh.

BERLIN.

Accounts are kept at Berlin, Magdeburg, Francfort on the Oder, and in ſome other cities of the electorate of Brandenburg, in *thalers*, or rixdollars, each rixdollar conſiſting of 24 gute groſchen, or good groſchen, and the good groſchen of 12 pfenings: but, ſince the eſtabliſhment of the Bank of Berlin, accounts are alſo kept in pounds banco, each pound of 24 groſchen banco, or 30 good groſchen, and the groſchen of 12 pfenings.

The coins of Pruſſia are as follow:

Of gold: the Frederick of 5 rixdollars; the double Frederick and the half Frederick of proportionate value; the ducat, which is reckoned 2¾ rixdollars.

Of ſilver: the rixdollar of 24 good groſchen; and the pieces of 12, 8, 4, 2, 1 good groſchen.

Of copper: pieces of 3 and 1 pfening.

Silver currency loſes from 5½ to 6 per cent in reſpect to gold currency, according to the abundance or ſcarcity of the former.

100 pounds banco are equal to 131¼ rixdollars ſilver currency.

The marc, for weighing gold and ſilver, is divided in the ſame manner as the marc of Cologne; but Mr. Tillet found the former 5 grains heavier, which correſponds exactly with the obſervations of Kruſe.

In the aſſaying of gold, the marc is divided into 24 carats, the carat into 12 grains; and in the aſſaying of ſilver, the marc is divided into 16 loths, the loth into 18 grains: thus each marc is compoſed of 288 grains.

The coinage of gold and ſilver is regulated ſince 1764, as follows:

A marc of gold of the purity of 21¾ carats is coined into 35 Fredericks; and a marc of ſilver of the purity of 12 loths is coined into 10½ rixdollars; the other coins in the ſame proportion.

Gold coinage is to ſilver coinage in the ratio of 1 to 14⅘.

The ſchipfund conſiſts of 20 liſpfunds, or 280 pounds; and the liſpfund of 14 pounds.

The centner is compoſed of 5 ſtone, or 110 pounds; and the *ſtein*, or ſtone, of Berlin is 22 pounds.

The *pfund*, or pound, conſiſts of 2 marcs, or 32 loths; and each loth is divided into 4 quintelins, 16 pfenings, or 32 hellers.

A laſt of corn is 3 wiſpels, and that of oats and of barley only 2.

The wiſpel meaſures 2 malters, 24 ſcheffels; and the ſcheffel is 4 viertels, 16 metzens, or 64 meſſgens.

A fudder of wine contains 4 oxhofts, 6 ohms, 12 eimers, 24 ankers, 768 naſs, or 1536 nœſſels.

A guebrande of beer is 9 kupen, 18 faſs, 36 tonnen, 144 aemjen, 3456 quartels, or 6912 nœſſels.

The hufe, land meaſure, is 30 great morgens; and the little hufe, or hacken, is 2 great morgens.

The great morgen is 400 ſquare ruthes, and the little morgen 180.

The ruthe is 12 feet of the Rhine.

BERN.

Accounts are kept at Bern in livres, each livre conſiſting of 20 ſols, and each ſol of 12 deniers. The livre is alſo divided into 10 batzes, and the batze into 4 cruitzers.

A *couronne*, or crown, is 2½ livres, 25 batzes, 50 ſols, 100 cruitzers, 600 deniers; and the gulden is 4 batzes, or 8 ſols.

The coins of Bern are as follow:

Of gold: the ducat of 7 livres, or 70 batzes.

Of ſilver: the patacon of 3 livres 6 ſols.

Of ſilver and copper: pieces of 5, 1, ½ batze, and of 1, ½ cruitzer.

Foreign coins are current at Bern at prices which vary according to circumſtances.

The marc, for weighing gold and ſilver, conſiſts of 8 ounces, 16 loths, or 3808 grains, and correſponds with 3813 grains troy-weight.

The apothecaries make uſe of a weight which is alſo compoſed of 8 ounces, or 16 loths, but is lighter, ſince it is only equivalent to 3654 grains troy-weight.

The pound, commercial weight, is 16 ounces, 32 loths, or 128 quintleins.

This weight varies in the other cities of the canton of Bern; for, if the weight of Bern be ſuppoſed to contain 10000 parts, it contains at Lauſanne 9727, at Morges 9729, at Nion 10959, at Romain-Mottier 10271, at Iverdun 10326, at Granſon 9674, at Payerne 9674, at Geſſenay 10525, at Vevai 10995, at Arau 9347, at Thoun 10289, at Zoffingen 9528, at Brouck 10489, at Berthoud 9872, and at Büren 10326.

A mut or mutte of corn is 12 berner maſs, 48 immis, 96 achterlis, 192 ſechzenerlis.

The land faſs, liquid meaſure, is 8 saums, the ſaum 4 eimers, and the eimer 25 maas.

The juchart, land meaſure, is 5000 pas; the pas, field meaſure, is 6¼ ſquare pieds; and the pas, for meaſuring foreſts, is 9 ſquare pieds.

The ruthe is 6 pieds of Bern.

BILBOA.

Accounts are kept at Bilboa, and in the other cities of Biſcay, in reals of vellon, each real of 34 maravedis.

The other coins are inſerted under the head of Spain.

The quintal macho, uſed in Biſcay for weighing iron, conſiſts of 146 pounds of Bilboa, each pound of 17 ounces; and the ſame quintal correſponds with 155⅛ pounds of Caſtille, each of 16 ounces.

At Bilboa goods are weighed by the Bilboa pound of 17 ounces of Caſtille each; and at Santander and Victoria by the pound of Caſtille of 16 ounces.

The fanega of Bilboa, which is compoſed of 12 celemines, or 48 quartillos, is 6 per cent larger than that of Caſtille; whence 100 fanegas of Bilboa are equal to 106 of Caſtille.

BOLOGNA.

Accounts are kept in this city of Italy in lire, each lira conſiſting of 20 ſoldi, and each ſoldo of 12 denari.

The lira is alſo divided into 2 paoli, or giuli, or 120 quatrini.

A paolo, or giulo, is 10 ſoldi, 60 quatrini, or 120 denari.

A ſoldo, bajoccho, or bolognino, is 6 quatrini, or 12 denari.

The ſcudo di cambio, or pezza da otto reali, is 85 ſoldi; wherefore 4 ſcudi are 17 lire.

Bank money is 3 per cent better than currency.

The coins of Bologna are as follow:

The petrono, or teſtono, of 3 paoli, or 30 ſoldi; the giuſtino of 26 ſoldi; the giulo of 10 ſoldi; the marajolo of 2 ſoldi; the ſoldo, bajoccho, or bolognino, of 6 quatrini; and the bagherona of 3 quatrini.

The pound is 12 ounces.

A corba of corn conſiſts of 2 ſtari, 8 quartorini, or 32 quarticini.

The corba, liquid meaſure, is 60 boccali.

BOLZANO.

In this city of Tyrol, accounts are kept in guldens, each gulden conſiſting of 60 kreitzers, or cruitzers, and each cruitzer of 4 pfenings.

The *reichſthaler*, or rixdollar, is 1½ gulden, 90 cruitzers, or 360 pfenings.

Theſe monies are diſtinguiſhed by three appellations, namely, *moneta del giro*, *moneta lunga*, and *meſs-valuta*.

Moneta del giro, or exchange money, conſiſts in the Spaniſh doubloons, and the French louis d'or; and moneta lunga, or current money, in the ſilver currency of Auſtria. In reſpect to meſs-valuta, it means an agio from 5 to 6 per cent, which the merchants allow at fair time upon the value of the ſeveral coins, in order to procure a ready ſale of their goods.

The ſaum is 4 centners, and the centner is 100 pounds.

BOMBAY.

Accounts are kept in rupees, each rupee conſiſting of 4 quarters, and each quarter of 100 reis.

The gold mohur is 3 paunchees, or 15 ſilver rupees; the paunchea 5 rupees; the rupee 16 annas, or 50 double pice; the anna 3⅛ double pice; the double pice, or fuddea, 1⅓ dorcea, 4 urdees, or 8 reis; the doreea 3 urdees, or 6 reis; the ſingle pice, or doganey, 2 urdees, or 4 reis; and the urdea 2 reis.

The ſeer, ſmall or ſilver weight, is 24 tolas; the tola, or 1 rupee, 40 valls; the vall 2½ gonze; and the gonze 6 chowe.

Silver is commonly ſold from 90 to 100 doganies, or ſingle pice, per tola; but computations in money are made by the ſuddeas, or double pice.

The candy, or Bombay great weight, conſiſts of 20 maunds, the maund of 40 ſeers, and the ſeer of 30 pice. The maund is equal to the Engliſh quarter.

The candy, meaſure for wheat and all grain except rice, conſiſts of 8 parahs; the parah of 16 adowlies; the adowly, or pily, of 4 ſeers; and the ſeer of 2 tiprees.

A moora of rice is 4 candies, or 25 parahs; a candy 6¼ parahs; a parah 20 adowlies; an adowly 7½ ſeers; and a ſeer 2 tiprees.

A bag of rice weighs 6 maunds, or 168 pounds avoirdupois; and a candy is equal to about 25 buſhels.

A raſh of ſalt is 16 annas, 40 tons, or 1600 baſkets.

The cuz, long meaſure, is 28 inches, or tuſſoo, and the heat 18; but the Engliſh yard of 36 inches is in common uſe.

Piece goods, and a few other articles, are ſold by the corge of 20 pieces.

BORDEAUX.

Accounts are kept in francs, each franc conſiſting of 100 cents; and all the coins current in France are equally received at Bordeaux.

The pound is 16 ounces poids de marc.

The effective weight of the quintal of Bordeaux is 101 pounds poids de marc; of the half quintal 50½ pounds; and of the quarter of a quintal 25¼ pounds; but in buſineſs theſe weights are only reckoned 100, 50, and 25 pounds, the difference being in favour of the purchaſer. The ſmaller weights are exact.

A boiſſeau of corn is divided into ſeveral inferior meaſures, from ½ to 1/16 parts; and 2 boiſſeaux of Bordeaux are the ſeptier of Paris.

A tonneau of wine is compoſed of 4 barriques; the barrique contains from 100 to 108 pots; and the pot of Bordeaux is 2⅕ pintes of Paris, or 2 litres 27 millilitres, new meaſure.

Brandy is ſold per 50 velts, and a puncheon contains about the ſame quantity.

BRASIL.

Accounts are kept in reis.

The pataca, ſilver coin of Braſil, is current there for 320 reis, and in Portugal only for 240.

The copper coins of Portugal are received in Braſil for double their value.

The weights and meaſures uſed in that country are the ſame as thoſe of Portugal.

BREMEN.

Accounts are kept in this Imperial and Anſeatic town in *thalers*, or rixdollars, each rixdollar conſiſting of 72 groſchen, and each groſchen of 5 current ſchwares.

A rixdollar is 2¼ marcs, 6 kopfſtuckes, 16 dutgens, 18 flinriches, 48 ſhillings, 72 groſchen, 360 ſchwares.

The coins of Bremen are as follow:

Of gold: the ducat of 2¾ rixdollars.

Of ſilver: the reichſthaler de eſpecie of 1½ rixdollar current.

Of ſilver and copper: the kopfſtucke of 12 groſchen, or 60 ſchwares; and pieces of 6, 3, 2, and 1 groſchen.

Of copper: the ſchware of 4 pfenings.

The marc, for weighing precious metals, is equal to that of Cologne.

The pound, for weighing rough goods, conſiſts of 2 marcs, 16 ounces, 32 loths, 128 quintins, or 512 orts.

The pfund ſchwer is 300 lbs, and in reſpect to the cartage of goods 308.

The ſchipfund is compoſed of 2½ centners, or 290 pounds.

The centner is 116 pounds; the liſpfund 14; the ſtein of flax 20, and that of wool 10.

The laſt meaſures 4 quarts, 40 ſcheffels, 160 viertels, 640 ſpints.

A fuder, or ton of wine, contains 6 ohms, 270 ſtubgens, or 4320 mengels: a ſtubgen is 16 mengels.

An oxhoft, or puncheon of brandy, contains 30 viertels.

A tonne of oil is 6 ſtechkannen, or 96 mengels.

An ell is 2 feet of Bremen.

BRESLAW.

Accounts are kept at Breſlaw, and in the other cities of Sileſia, in *thalers,* or rixdollars current, each rixdollar conſiſting of 30 ſilver groſchen of 12 pfenings.

The pound banco of Berlin is 30 good groſchen, or 360 pfenings.

The reichſthaler de eſpecie is 1⅓ rixdollar current, or 40 ſilver groſchen.

The rixdollar current is 1¼ thaler of Sileſia, which is thus divided:

A thaler of Sileſia is 1⅕ gulden, 19⅕ good groſchen, 24 ſilver groſchen, 36 weiſſe groſchen, 72 kreitzers, 96 groſchels, or 288 denares.

A kreitzer is alſo divided into 2 dreyers, and a dreyer into 3 hellers.

Theſe monies are generally reckoned by ſchocks of 60 and 40 ſilver groſchen, and by marcs of 32 and 16 ſilver groſchen, and 32 weiſſe groſchen.

3 reichſthalers de eſpecie make 4 rixdollars current
4 rixdollars current . . . . 5 thalers of Sileſia
5 thalers of Sileſia . . . . 6 guldens ditto
6 guldens ditto . . . . 4 rixdollars current.

The coins of Sileſia are as follow:

Of gold: the Frederick of 5 rixdollars, bearing an agio of about 6⅔ per cent; the ducat of 90 ſilver groſchen.

Of ſilver: the rixdollar current of 30 ſilver groſchen; the half and the third of the rixdollar.

Of ſilver and copper: pieces of 4, 2, and 1 good groſchen; the timpfe, of 18 Poliſh groſchen, or 6 ſilver groſchen; and the ſilver groſchen of 3 Poliſh groſchen.

The marc, for weighing gold and ſilver, conſiſts of 8 ounces, or 16 loths; and each loth is divided into 4 quintels, 16 denares, or 32 hellers.

In the aſſaying of gold, the marc is divided into 24 carats; and the carat into 4 grains, or 12 grœnen.

In the aſſaying of ſilver, the marc conſiſts of 16 loths, and the loth of 16 grains.

The ſchifpfund is 3 centners, 16½ laeps or ſteins, or 396 pounds.

The pound is 16 ounces, 32 loths, 128 quintels, or 512 denares.

A malter of corn meaſures 12 ſcheffels, 48 viertels, 192 metzens, or 768 meſſœls.

An eimer, liquid meaſure, contains 8 topfs, 80 quarts, or 320 quartiers.

21 ells of Sileſia make 22 ells of Breſlaw.

BRUNSWICK.

In this city, at Wolfenbuttle, Lunenburg, and in part of Weſtphalia, accounts are kept in thalers, each thaler conſiſting of 36 marien groſchen, each of 8 pfenings.

A current thaler is 1½ gulden, 1⅘ marien gulden, 24 gute groſchen, 36 marien groſchen, 48 gœſgens, 72 mathiœrs, 288 pfenings.

The coins of Brunſwick are as follow:

Of gold: the carl of 5 thalers; the double and the half carl, in the ſame proportion; the ducat of 2¾ thalers.

Of ſilver: the reichſthaler de eſpecie of 48 marien groſchen; the current thaler of 36; the gulden of 24; the half and the quarter gulden of proportionate value.

Of ſilver and copper: pieces of 3 and 1½ marien groſchen; of 2 and ½ gute groſchen; of 6 and 4 pfenings.

The marc, for weighing precious metals, is very nearly equal to that of Cologne; and a marc of gold of the purity of 21¾ carats is coined into 35 carls.

The ſchiſpfund is compoſed of 20 liſpfunds, or 280 pounds; the centner of 114 pounds; and the ſtein of 10.

A wiſpel of corn meaſures 4 ſcheffels, 40 himtens, or 640 lœchers.

A fuder of wine contains 6 ahms, 240 ſtubgens, or 1920 nœſſels.

The ruthe is 16 feet, the ell 2, and the foot is 12 inches.

BUSSORAH.

In this city, ſituated in Irac Arabia, accounts are kept in mamudis of 10 danimos, the danimo of 10 fluches.

A toman conſiſts of 100 mamudis.

The coins of Buſſorah are as follow:

Of gold: the ſequino miſry of Cairo, which is worth 13½ mamudis; the ſequino gingerly, 15 mamudis; the glani of Perſia, 18 mamudis; and the zecchino of Venice, 21 mamudis.

Of ſilver: the mamudi of Buſſorah; the old abaſſi of Perſia, which is worth 2⅘ mamudis; and the grucho of Turkey, 4½ mamudis.

Of copper: the danimo of 10 fluches.

The chequi, for weighing gold and ſilver, conſiſts of 100 miſcals, or 150 drachms; and the miſcal, of $1\frac{1}{2}$ drachm, is about 72 grains troy-weight.

Two ſorts of maunds are uſed at Buſſorah; the maund ſeſſy, conſiſting of 76 vaquis á tary, and the maund á tary of 24 vaquis á tary.

The vaqui á tary is $106\frac{2}{3}$ miſcals, or 160 drachms.

The vaqui-ſeſſy, or the oka of Buſſorah, weighs $333\frac{1}{3}$ miſcals, or 500 drachms.

The oka of Bagdad is $2\frac{1}{2}$ vaquis á tary, and weighs $266\frac{2}{3}$ miſcals, or 400 drachms.

The preceding is the mode of reduction of weights uſed by the Arabians; but the Europeans eſtabliſhed at Buſſorah have adopted the following:

The vaqui á tary, 25 of which are 1 maund, contains $112\frac{8}{25}$ miſcals, or $168\frac{12}{25}$ drachms.

The vaqui-ſeſſy, of $3\frac{1}{8}$ vaquis á tary, is 351 miſcals, or $526\frac{1}{2}$ drachms.

The oka of Bagdad, of $2\frac{1}{2}$ vaquis á tary, is $280\frac{4}{5}$ miſcals, or $421\frac{1}{5}$ drachms.

The maund ſeſſy conſiſts of 3 maunds á tary, and each maund á tary is reckoned for 52 marcs, French weight, and contains 2808 miſcals, or 4212 drachms.

CADIZ.

Accounts are kept at Cadiz in *reales de plata antiguos*, or reals of old plate, each real conſiſting of 16 quartos, or 34 maravedis of old plate.

The *peſo duro*, or hard dollar, is $10\frac{5}{8}$ reals of old plate, 170 quartos, or $361\frac{1}{4}$ maravedis of old plate.

The *peſo di cambio*, or dollar of exchange, is 8 reals, 128 quartos, or 272 maravedis of old plate.

The other coins and monies of account are the ſame as thoſe inſerted under the head of Spain.

The quintal is compoſed of 4 arrobas, and the arroba of 25 pounds.

The pound is equal to that of Caſtille.

A bota of wine conſiſts of 34 arrobas mayores, and each arroba of 34 pounds of 16 ounces each.

A pipa of oil is 32 arrobas menores, and each arroba 25 pounds.

25 arrobas mayores make 32 arrobas menores.

An arroba mayor, wine meaſure, is divided into 8 azumbres, or 32 quartillos, which are equal to thoſe of Caſtille.

The cahiz meaſures 12 fanegas; and the fanega, which is the ſame as that of Caſtille, 12 celemines.

A laſt of ſalt is 4 cahices; and a fanega of cocoa weighs 110 pounds.

CAIRO.

Accounts are kept in piaſtres of 33 medins.

The effective piaſtre is 60 medins, and the Spaniſh dollar is worth about 76 medins.

There are in Egypt different weights for the ſeveral deſcriptions of goods.

	Rotolos.
The cantaro, or uſual quintal, is	100
The cantaro of quickſilver and pewter .	102
of coffee and wire	105
of nutmegs, ſalſa parilla, and elephants' teeth . . .	110
of almonds and fruits . . .	115

The cantaro of dye woods 120
of arſenic and other drugs 125
of gum arabic and balms . 133

A harſela, for weighing ſilk, is 400 drachms, and is equivalent to $2\frac{5}{8}$ pounds avoirdupois.

CALICUT.

Accounts are kept at Calicut and Tellicherry, on the coaſt of Malabar, in Gallee fanams, each fanam conſiſting of 16 tars, or vis.

A ſilver rupee is five gold fanams, or 80 ſilver tars; and a gold fanam is 16 ſilver tars.

The miſcal, for weighing gold and ſilver, is compoſed of $11\frac{1}{2}$ fanams, and correſponds with 2 pennyweights 21 grains troy-weight.

The candy conſiſts of 20 maunds, and is 600 pounds avoirdupois; the maund is 40 ſeers, or 100 pools, and weighs 30 pounds avoir du poids.

5 Calicut maunds are equal to 6 Madras maunds.

A covid is 18 inches, and a guz $28\frac{1}{5}$.

CANARY ISLANDS.

In theſe iſlands, the principal of which are ſeven in number, and are all under the dominion of Spain, accounts are kept in *reales corrientes*, or current, each real of 8 quartos.

The piſtole of 32 reals of plate is 40 current reals
The dollar of exchange . . . . . . 10 ditto
The ducat of exchange . . . . $13\frac{3}{4}$ ditto
The doubloon of 80 reals of vellon $53\frac{1}{8}$ ditto
The hard dollar . . . . $13\frac{9}{32}$ ditto.

85 current reals are equal to 128 reals of vellon.

The quintal is compoſed of 100 pounds, and the pound is nearly equal to that of Caſtille.

The pipa of wine, which is ſomewhat leſs than that of Spain, correſponds with about 29½ great arrobas.

The vara of the Canary iſles is 1 inch longer than that of Caſtille.

CANEA.

In this city, and in all the iſland of Candia, accounts are kept in piaſtres of 80 paras.

The cantaro conſiſts of 44 okas, or 100 rotolos. The oka is divided into 400 drachms, and the rotolo into 176.

This rotolo is denominated heavy, and there is another which is lighter.

A miſcala of oil weighs 8½ okas, and 80 miſcalas correſpond with 236 gallons.

CANTON.

Accounts are kept at Canton, and in all China, in *lyangos*, or tales, each tale conſiſting of 10 maces, and each mace of 20 candarines.

There is but one piece of coin in China, which is made of baſe metal, and called *caſh*; it is uſed for paying coolies, labourers, and for ſmall payments in the Bazar.

10 caſh make a candarine, and 2000 caſh a tale, 3 of which are equal to a pound ſterling.

The coin under conſideration is compoſed of 6 parts of copper and of 4 parts of lead. It is round, ſtamped on one ſide only, and is rather raiſed at the edges, having four holes in the middle. It is cuſtomary to collect the caſh in number from 100 to 1000 upon a ſtring.

In the aſſaying of gold and ſilver, the ſycee, or the unit of reference, is divided into 100 parts, called touch; ſo that, if a ſhoe of gold touch 92, it contains 92 parts of fine gold and 8 parts of alloy. Gold is not conſidered in China as money, but as merchandize, and it is ſold at a certain price in ſilver by the weight of 10 tales.

Although ſilver be often uſed in China as a numeral value, it is never faſhioned into perfect money; the practice being confined to ſeparating pieces of bullion, and of different ſizes, from $\frac{1}{2}$ tale to 100 tales, the intrinſic value of which is determined by their weight and fineneſs.

If ſilver in bars be inferior to 80 touch, it is not admitted in commerce.

Spaniſh dollars are reputed to be of 90 touch; the ſilver currency of France 93, and that of England 94.

100 tales ſhould weigh $120\frac{4}{5}$ ounces troy-weight, each of which is equivalent to 8 maces 2 candarines $7\frac{4}{5}$ caſh.

The pecul conſiſts of 100 catties, and the catty, which is 16 tales, correſponds with 1 pound 3 ounces 12 drams avoirdupois.

All ſorts of proviſions, as milk, fowls, hogs, greens, &c., are ſold by the catty.

25 cantas of ſooloo are 1 pecul of rice of 100 catties.

A covid conſiſts of 10 punts, and is $14\frac{5}{8}$ inches of England.

CARARA.

In this town of Tuſcany, accounts are kept in lire, each lira conſiſting of 20 ſoldi, and each ſoldo of 12 denari currency.

Marble is meaſured per palmo of 12 oncie, 15 of which are equal to the Engliſh foot.

CASSEL.

In this city, and in the landgravate of Heſſe, accounts are kept in thalers, each thaler conſiſting of 32 albus, and each albus of 9 pfenings, or 12 Heſſian hellers.

The current thaler is 1½ reichs gulden, 24 gute groſchen, 32 albus of Heſſe, 36 marien groſchen, 90 kreitzers, 288 pfenings, or 384 hellers.

The effective reichſthaler is 1⅓ thaler, or 2 reichs guldens.

Theſe monies are reduced as follows:

3 effective reichſthalers make 4 current thalers
2 current thalers . . . . 3 reichs guldens
4 albus of Heſſe . . . . 3 gute groſchen
8 albus of Heſſe . . . . 9 marien groſchen.

The currency of Heſſe chiefly conſiſts of pieces of 8, 4, 2, 1 gute groſchen, of 2⅓ albus, of 4 hellers, and 3 pfenings.

The cleuder, for weighing wool, is compoſed of 21 pounds.

A viertel of corn meaſures 4 himtens, 16 mœtſens, or 64 mœſgens.

The fuder contains 6 ohms, 120 viertels, or quarteleins, and 480 maas.

CLEVES.

Accounts are kept at Cleves, Juliers, and generally in the circle of Lower Weſtphalia, in current reichſthalers of 60 ſtivers, each ſtiver conſiſting of 16 hellers, or 8 pfenings, currency of Cleves.

The reichſthaler is 2 thalers of Cleves, or 1½ reichs gulden, each of the latter being 2 guldens of Cleves.

The thaler of Cleves is 1½ gulden of Cleves, or 4 ſchillings; and the Cleves gulden is 2⅔ ſchillings, 8 gute groſchen, 20 ſtivers, 30 kreitzers, 40 fœtmengers, 80 friſche, 160 pfenings, or 320 hellers.

2 reichſthalers . . make 3 reichs guldens
3 reichs guldens. . . . . . 4 Cleves thalers
2 Cleves thalers . . . . . 3 Cleves guldens
3 Cleves guldens . . . . . 8 ſchillings.

The coins of Pruſſia are current at Cleves.

The laſt conſiſts of 15 malters, or 60 ſcheffels, and the ſcheffel of 4 viertels, or 48 kanne.

COBLENTZ.

Accounts are kept in thalers of 54 petermœngers current.

A current thaler is 1½ reichs gulden; and the reichs gulden is 12 great petermœngers, and 36 little petermœngers.

The other monies, as well as the weights and meaſures, are the ſame as thoſe of Cologne.

COLOGNE.

Accounts are kept either in effective thalers, or rixdollars, of 80 current albus, or in current rixdollars of 78 albus current, the albus being divided into 12 hellers.

The effective rixdollar is alſo $1\frac{1}{4}$ rœder-gulden, $1\frac{1}{2}$ effective gulden, 2 herren guldens, $3\frac{1}{3}$ guldens of Cologne, 4 orts, 8 ſhillings, 20 blafferts, or 80 albus current.

The blaffert is $1\frac{1}{2}$ rœder-albus, $2\frac{2}{5}$ gœſgens, 3 ſtivers, 4 albus current, $4\frac{1}{2}$ kreitzers, 5 light albus, 6 fœtmengers, 48 hellers.

39 effective rixdollars make 40 current rixdollars
13 ditto . . . . 20 current guldens
3 ditto . . . . 10 guldens of Cologne
4 ditto . . . . 5 rœder-guldens
4 current rixdollars . . . . . 13 guldens of Cologne
3 rœder-albus . . . . 8 current albus.

The coins of Cologne are as follow:

Of gold: the imperial ducat of 3 effective rixdollars.

Of ſilver: the effective rixdollar; the effective gulden, or zweydrittelſtucke, of $53\frac{1}{2}$ current albus; the half and the quarter gulden of proportionate value.

Of ſilver and copper: the ſtiver of $1\frac{1}{3}$ albus, or 16 hellers; the fœtmenger of 8 hellers; and the current albus of 12 hellers.

The marc, for weighing precious metals, is well known, and uſed in the greateſt part of Germany. It conſiſts of 8 ounces, 16 loths, 64 quintins, 256 pfenings, or 4352 eſches.

According to aſſays made by Mr. Tillet, the marc of Cologne is equivalent to 4403 grains of France; whence it correſponds with $3612\frac{1}{6}$ grains troy-weight.

The pound, for weighing rough goods, conſiſts of 2 marcs.

The centner, or quintal, of Cologne conſiſts of 106 pounds.

A laſt of corn is 20 malters.

The ton conſiſts of 160 viertels, or 640 maas.

An ohm of wine contains 26 viertels, 104 maas, or 416 pintges.

Two ſorts of ells are uſed at Cologne, the groſſe and the kleine: 19 groſſe ells make 23 kleine ells.

COPENHAGEN.

In this city, and in the greater part of Denmark, accounts are kept in *rikſdalers,* or rixdollars, each rixdollar conſiſting of 6 marcs, and each marc of 16 ſkillings Daniſh. In ſome other parts of this kingdom, the rixdollar is divided either into 4 orts of 12 ſtivers, or into 48 ſtivers.

The ſame rixdollar is 1½ daler, 6 marcs, 48 ſtivers, 96 ſkillings Daniſh, 192 firkes, 288 wittes, or 1152 pfenings.

The coins of Denmark are as follow:

Of gold: the effective ducat, worth about 2½ rixdollars, or 15 marcs; the current ducat of 2 rixdollars, or 12 marcs.

Of ſilver: the effective rixdollar of 7⅜ marcs, or 59 ſtivers; the *krohn,* or crown, of 34 ſtivers, or 68 ſkillings Daniſh.

Of ſilver and copper: the ebrœer, or juſtus judex, of 7 ſtivers; the double ebrœer of 14 ſtivers; the kopſtyk of 10 ſtivers; the riks-ort of 12 ſtivers; and the pieces of 15, 10, 8, 4, 2, and 1 ſkilling Daniſh.

Of copper: the ſkilling Daniſh; the half and quarter ſkilling.

The marc, for weighing precious metals, conſiſts of 16 lods, 64 quintins, 128 pfenings, or 256 hellers; and as it correſponds, according to Mr. Tillet, with 4438⅕ grains of France, it is equivalent to 3641⅙ grains troy-weight.

In the aſſaying of gold, the marc is divided into 24 carats, each carat into 12 grains; and in the aſſaying of ſilver, into 16 lods, each lod into 18 grains.

A marc of gold of the purity of 21 carats and 2 grains has been coined ſince 1757 into 85 ducats; and a marc of ſilver of the purity of 14 lods, into 9¼ effective rixdollars ſince 1776.

The pound, for weighing rough goods, conſiſts of 32 lods, 16 of which ſhould be equal, according to the ſtatutes, to 17 of thoſe which compoſe the marc for weighing gold and ſilver: Mr. Tillet found, however, that the half pound weighed only 4702½ grains of France, which correſpond with 3858 grains troy-weight; ſo that the half pound, which ought to be 6¼ heavier than the marc, exceeds its weight in the ratio of 100 to only 105⅝.

The ſkipund conſiſts of 3⅕ centners, 20 liſpunds, or 320 pounds.

The centner is 100 pounds, and the liſpund 16.

The vaag, or vog, is 3 biſmerpunds, or 36 pounds.

The apothecaries make uſe of the weight of Hamburgh.

A laſt of corn is 12 tœnde, or 96 ſkiepers.

A tœnde is 8 ſkiepers, and a ſkieper, or ottinger, 4 fierdingkar. The tœnde meaſures 4½ cubic feet of Denmark.

The ſtickfat, liquid meaſure, is 7½ ahms, or 1162½ pottes.

The fuder contains 2 pipes, 4 oxhofts, or 6 ahms; and the ahm is divided into 4 ankers, 40 ſtubgens, 77½ kanne, 155 potte, or 620 poele.

A tœnde of beer is 136 pottes, and a tœnde of ſalt 176.

The *alen,* or ell, of Denmark is divided into 2 feet; and the *fod,* or foot, into 12 inches, or 144 lines.

The Daniſh fathom, *Danſke faon,* is compoſed of 6 feet.

The tœnde-hart-korn, land meaſure, is 28000 ſquare ells, and conſiſts of 8 ſkieper-hart-korn, 16 fierdingkar, 48 album, and 144 penge.

A Daniſh mile meaſures 12000 ells.

CORFU.

In this iſland, the capital of the Republic of the Seven Iſlands, accounts are kept in lire, each lira conſiſting of 20 ſoldi, and each ſoldo of 12 denari. The lira is alſo 10 Venetian copper coins, called *gazzette.*

The ſeveral other coins of Venice, ſuch as the gold ſequin, the ſilver dollar and ducat, and the imperial rixdollar of the coinage of Maria Thereſa, are current at Corfu, as is alſo the Spaniſh dollar, though in a leſs degree. The value, however, of theſe monies is variable, and particularly of the ſequins.

The piaſtre is 40 paras, or 80 gazzette; there are alſo coins of 100, 80, 60, 30, 20, 15, 10, and 5 paras.

The piece of 100 paras is called by the Italians, *tallero Turco,* and by the Turks themſelves, *kara-grouſch.*

The Imperial and Venetian dollars are worth about 24 lire 10 ſoldi; but, in the payment of duties to the government, the latter is not received for more than 24 lire.

The weights are upon the principle of the Venetian weights.

The meaſure for oil, which is the chief production of the iſland, is called *zara*, or jar.

A tonnellata of oil is compoſed of 80 jars, and the barrica of 4.

The dry meaſure is called moggio, and contains about 5 per cent more than 2 ſtaja of Venice.

At Zante, Cephalonia, Santa Maura, Cerigo, Paxi, and Ithaca, which are the other iſlands of the republic, the Turkiſh coins are more current than at Corfu.

The currants of Zante, Cephalonia, and Ithaca, which are the chief exportable articles from thoſe iſlands, are purchaſed almoſt wholly by Venetian ſequins, at a certain rate per migliajo, or 1000 pounds Venetian great weight.

COROMANDEL.

On the coaſt ſo called, in the Eaſt Indies, accounts are kept in pagodas, in rupees, or in fanams.

The effective gold pagoda is reckoned at Portonovo for 12 fanams of gold, at Godelura for 18, at Negapatnam for 24, at Pondicherry and Malipura for 24 fanams of ſilver, and is generally worth 3½ rupees.

The rupee of account is always 16 annas.

The anna is a ſmall coin of ſilver, and the caſh is of copper.

The candy conſiſts of 20 maunds, $32\frac{1}{2}$ talons, 65 taries, 130 tukos, $162\frac{1}{2}$ vis, 800 ſeers, 6500 paloins, 65000 pagodas.

The candy is divided by the Engliſh into 20 maunds, or 150 vis, which are equivalent to 500 pounds avoirdupois; and by the French into 20 mons, or 160 bis, correſponding with 480 pounds of France.

The Coromandel weight is 2 per cent heavier than that of the coaſt of Malabar.

Several ſorts of meaſures are uſed in Coromandel for rice and other deſcriptions of goods, ſuch as the garza, the mercale, and the olka; but by reaſon of the difference exiſting in the application of thoſe meaſures in various parts of the coaſt, it would be ſcarcely practicable to offer diſtinct explanations of the whole.

CORSICA.

Accounts, which were formerly kept in this iſland in lire, ſoldi, and denari currency of Genoa, are actually kept in francs and cents.

The pound, for weighing rough goods, correſponds with 5315 grains troy-weight.

The ſtajo, dry meaſure, is 2 mezini, or 12 bazini.

A barril of wine is 2 ſome, 12 zucchi, 108 pinti, or 432 quarti.

CURAÇOA.

In this iſland of South America, and belonging to the Dutch, accounts are kept in peſos, or dollars, each dollar conſiſting of 8 reals, or ſhillings, and each ſhilling of 6 ſtivers.

The Spaniſh gold piſtole is reckoned for 4½ dollars, and worth 9 florins and 9 ſtivers currency of Holland.

The joaneſe of Portugal is worth about 11 dollars.

The pound is 7½ per cent heavier than that of Amſterdam.

The Spaniſh vara is uſed at Curaçoa, and 81 varas make 100 Dutch ells.

CYPRUS.

Accounts are kept in this iſland in mines, each mine conſiſting of 100 aſpers.

The coins in circulation are the ſame as thoſe of Turkey.

A cantaro is 100 rotolos, and a rotolo conſiſts of 12 ounces, or 750 drachms.

The oka of Cyprus is 400 drachms, and the ounce 62½.

The weight at the town of Famaguſta is 4 per cent heavier than that of the other parts of the iſland.

Corn is meaſured by the medimno; wine by the cuſs; and oil is ſold per rotolo of 2½ okas.

DAMASCUS.

In this city, the capital of Syria, accounts are kept in piaſtres of 80 aſpers.

The other monies are the ſame as thoſe inſerted under the head of Aleppo.

The cantaro conſiſts of 100 rotolos, and the rotolo is compoſed of 600 peſos, or 400 metecales.

DANTZIC.

Accounts are kept at Dantzic, the capital of Weſtern Pruſſia, in *guldens,* or florins, each florin conſiſting of 30 groſchen.

The *thaler,* or rixdollar, conſiſts of 3 florins, 90 groſchen, or 270 ſchillings current money.

The Pruſſian thaler makes 4 florins, 120 groſchen, or 360 ſchillings of Dantzic.

3 Pruſſian guldens make 4 florins of Dantzic.

The coins current are as follow:

Of gold: the Dutch ducat, fixed at 12 florins Dantzic currency.

Of ſilver: the effective reichſthaler, worth about 6 florins.

Of ſilver and copper: the ſchoſtack, or ſechſer, of 6 groſchen; the dutgen of 3 groſchen; and the groſchen of 3 ſhillings.

Of copper: the ſhilling.

The marc, for weighing gold and ſilver, correſponds, according to Mr. Tillet, with 3395 grains of France, which are equivalent to 3605½ grains troy-weight. It conſiſts of 8 ounces, 16 loths, 64 quintins, 256 pfenings.

In the aſſaying of gold, the marc is divided into 24 carats, each carat into 12 grains; and in the aſſaying of ſilver, into 16 loths, each loth into 16 pfenings.

The ſchipfund is compoſed of 20 liſpfunds, or 330 pounds.

The centner conſiſts of 5 ſtone, or 110 pounds: the ſtone is 22 pounds, and the liſpfund 16½.

The pound is 2 marcs, 16 ounces, 32 loths, 48 ſchott, or 512 pfenings.

A laſt of corn, when purchaſed by the burghers, meaſures 60 ſcheffels, 240 viertels, or 960 metzens;

but the ſame laſt, when ſhipped off, meaſures only 56½ ſcheffels Berlin meaſure.

A laſt of wine conſiſts of 2 faſs, or fuders, 8 oxhoſts, 12 ahms; and the ahm contains 4 ankers, 20 viertels, or 110 ſtofs.

A laſt of beer conſiſts of 6 faſs, or 1080 ſtofs.

The hube, land meaſure, is 30 morgens, or 9000 ſquare ruthes.

The Poliſh hacken correſponds with 20 morgens, or 6000 ſquare ruthes.

The morgen is 300 ſquare ruthes, the ſeil 10; the ruthe is 7½ ells, the fathom 3; and the ell is 2 feet.

N. B. Pruſſian weights and meaſures have been introduced at Dantzic, and all public ſcales have Pruſſian weights.

DUBLIN.

Accounts are kept at Dublin, and throughout Ireland, in pounds Iriſh, each pound conſiſting of 20 ſhillings, and each ſhilling of 12 pence Iriſh.

The coins of England are to thoſe of Ireland in the proportion of 12 to 13; wherefore

The guinea is worth	22 ſhillings	9 pence
The crown	5 ditto	5 ditto
The pound ſterling .	21 ditto	8 ditto
The ſhilling ſterling		13 ditto.

The weights and meaſures are the ſame as thoſe of England.

DUNKIRK.

Accounts are kept in francs, each franc conſiſting of 100 cents.

The coins of France are current at Dunkirk, without any difference either in their denomination or in their value.

The pound conſiſts of 14 ounces poids de marc; whence 7 pounds of Paris make 8 pounds of Dunkirk.

The Paris and Flemiſh ells are uſed at Dunkirk.

Corn is meaſured by the raziere, of which there are two ſorts, the ſea raziere and the land raziere.

8 ſea razieres make 9 land razieres.

A lot, liquid meaſure, is 4 pints, or 16 poteés.

ELSINORE.

Accounts are kept in this city of Denmark either in *rikſdalers*, or rixdollars, each rixdollar conſiſting of 4 orts, and each ort of 12 ſtivers, or in rixdollars of 48 ſtivers.

Theſe monies have three different values, denominated ſpecie, crown, and current.

Specie-money is that in which the duties at the Sound were fixed in 1687 and 1701.

Crown-money was the former currency of Denmark, the value of which is now 6¼ per cent more than that of the preſent coinage.

Current-money is that which is actually circulating in Denmark, and alſo uſed in reſpect to the payment of the duties at the Sound.

The proportion between theſe denominations is as follows:

Specie-money is $12\frac{1}{2}$ per cent better than crown-money, and $19\frac{51}{96}$ per cent better than current-money.

To reduce ſpecie-money into crown-money, add $\frac{1}{8}$; and to reduce crown-money into current-money, add $\frac{1}{16}$; whence 6 ſtivers are to be added for each ſpecie rixdollar, and 3 ſtivers for each crown rixdollar, to make them current money.

128 ſpecie rixdollars make 144 crown rixdollars, or 153 current rixdollars.

8 ſpecie rixdollars make 9 crown rixdollars.
16 crown rixdollars make 17 current rixdollars.

The effective rixdollar, coined ſince 1776, and of which I have ſpoken under the head of Copenhagen, is $22\frac{11}{12}$ per cent better than the current rixdollar, and $2\frac{382}{459}$ per cent better than the ſpecie rixdollar, in which the duties are payable.

The weights and meaſures uſed at Elſinore are the ſame as thoſe of Copenhagen.

EMBDEN.

Accounts are kept at Embden either in reichſthalers, each conſiſting of 54 ſtivers, and each ſtiver of 10 wittens; or in guldens, each gulden conſiſting of 20 ſtivers, or 200 wittens. The gulden is alſo divided into 10 ſchaafs, and the ſchaaf into 10 wittens.

The ſpecie reichſthaler is 4 marcs, or 72 ſtivers.

The current reichſthaler is 3 marcs, or 54 ſtivers.

The thaler, or ſchlecht thaler, is 30 ſtivers.

The gulden is divided into other monies as follows:

A gulden is $1\frac{1}{9}$ marc, $3\frac{1}{3}$ ſhillings, $6\frac{2}{3}$ flinderkes, 10 ſchaafs, 20 ſtivers, $26\frac{2}{3}$ groots, 40 ſeyferts, 80 oerts, 200 wittens.

3 ſpecie reichſthalers are 4 current reichſthalers
5 ditto are 12 thalers, or 18 current guldens
5 current reichſthalers are 9 current thalers
10 current reichſthalers . . 27 current guldens
2 current thalers . . . . . 3 current guldens
9 current guldens . . . . . 10 current marcs.

The coins of Embden are as follow:

Of ſilver: the zweydrittelſtucke of 36 ſtivers; the ſchlecht thaler of 30 ſtivers; and the gulden of 20 ſtivers.

Of ſilver and copper: the pieces of $4\frac{1}{2}$, 3, and $1\frac{1}{2}$ ſtiver; the flinderke of 3 ſtivers; the ſchaaf of 2 ſtivers; the ſeyfert of 5 wittens, the oert of $2\frac{1}{2}$ wittens; and the witten.

All the coins of Pruſſia are current at Embden, without any difference either in their denomination or in their value.

The ſchippond is 3 centners, or 300 pounds, and each pound is 16 ounces, or 32 loths; but in ſome other parts of Eaſt Frieſland the pound is compoſed of a greater number of loths.

At Greetzyl, Leer, and Stikhauſen, the pound is 34 loths; at Berum, Dornum, Eezens, Friedeburg, Norden, and Witmunde, it is 36.

A tonne of corn conſiſts of 4 werps, 8 ſcheffels, or ſcheppels, or 144 krueſſes.

15 tonnes, 60 werps, or 120 ſcheffels, compoſe the laſt of Embden, Greetzyl, Leer, and Stikhauſen: but the laſt at Friedeburg is 13 tonnes, or 52 werps, each of 43 krueſſes; at Witmunde, 14 tonnes, or 56 werps, each of 44 krueſſes; at Berum, Dornum, and Norden, 14 tonnes, or 56 werps, each of 42 krueſſes.

ERFURT.

In this city of Upper Saxony, accounts are kept in thalers, each thaler conſiſting of 24 gute groſchen, and each gute groſchen of 12 pfenings.

The other coins are the ſame as thoſe which are current at Leipſic.

A malter of corn is 4 viertels, 12 ſcheffels, 48 metzens, or 192 mœgens.

FLORENCE.

Accounts are kept at Florence, and in the kingdom of Etruria, in ſeveral manners, according to the ſpecific value of the following monies:

The ſcudo d'oro, or gold crown, of $7\frac{1}{2}$ lire, is divided into 20 ſoldi d'oro, and the ſoldo d'oro into $4\frac{1}{2}$ crazie, or 12 denari d'oro.

The ducato, ducatone, ſcudo corrente, or piaſtra of 7 lire, is divided into 20 ſoldi di ducato, 84 crazie, or 240 denari di ducato.

The pezza da otto reali, or livornina of $5\frac{3}{4}$ lire, is divided into 20 ſoldi di pezza, 69 crazie, or 240 denari di pezza.

The teſtone, or doppia lira, is 2 lire, 3 paoli, or giuli, 24 crazie, 40 ſoldi di lira, 120 quatrini, or 480 denari di lira.

The ſoldo d'oro is $1\frac{1}{14}$ ſoldo di ducato, $1\frac{7}{23}$ ſoldo di pezza, or $7\frac{1}{2}$ ſoldi di pezza.

14 ſcudi d'oro are 15 ducati
23 ditto . . . . 30 pezze da otto reali
23 ducati . . . . . . 28 ditto.

The Florentine money, denominated *moneta buona,* is $4\frac{8}{23}$ per cent better than the money of Leghorn, called *moneta lunga ;* wherefore

23 lire moneta buona are 24 lire moneta lunga.

The coins of Etruria are as follow:

Of gold: the ruopono, or rupono, of 40 lire; the doppia of 23 lire; the half doppia of 11½ lire; and the zecchino gigliato of 13⅓ lire, or 160 crazie.

Of ſilver: the franceſcono of 2 franceſcini, worth 6⅔ lire, or 10 paoli; the ducato, or piaſtra, of 7 lire, excluſive of an agio of 6 per cent, more or leſs; the tallari, or lanternina della torre, of 6 lire, excluſive of an agio of 4 per cent; the pezza della roſa, or livornina, of 5¾ lire, excluſive of an agio of 3 per cent.

Of ſilver and copper: the doppia piaſtrina of 34 crazie and 2 quatrini; the piaſtrina of 17 crazie and 1 quatrino; the teſtone of 3 paoli, or 24 crazie; the cavaleto of 2 paoli, or 16 crazie; the lira of 1½ paolo, or 12 crazie; the paolo, or giulo, of 8 crazie; the crazie of 5 quatrini; the ſoldo of 2 quatrini; and the quatrino of 4 denari.

The pound, for weighing gold and ſilver, correſponds, according to Mr. Tillet, with 6392 grains of France, which are equivalent to 5244 grains troy-weight.

The pound, for weighing rough goods, being 3 per cent heavier, is therefore 5401⅜ grains troy-weight.

Each pound is divided into 12 onzie, or ounces, the ounce into 24 denari, and the denaro into 24 grani; whence the pound is 6912 grains of Florence.

A moggio of wheat conſiſts of 8 ſacchi, or 24 ſtaji; each ſtajo weighs about 50 pounds: but a ſtajo of ſalt weighs 72 pounds of Florence.

The cogna, liquid meaſure, contains 10 barrili, 20 fiaſchi, 400 boccali, or 1600 quartuci.

An orcio of oil is compoſed of 32 boccali, or metadeli.

A cana is 4 bracci, or 8 palmi; there are two meaſures of that denomination.

The ſoccata, land meaſure, conſiſts of 10 ſtajole, or 660 pertiche, each perticha of 5 bracci.

FRANCE.

Late Syſtem.

Accounts were kept in France in livres tournois, each livre conſiſting of 20 ſols, or ſous, and each ſol, or ſou, of 12 deniers.

The crown of exchange was 3 livres, or 60 ſols tournois.

The coins of France were as follow:

Of gold: the double louis of 48 livres; the louis of 24 livres; and the half louis of 12 livres.

Of ſilver: the crown, or écu, of 6 livres; the petit écu of 3 livres; and pieces of 24, 12, and 6 ſols.

Of ſilver and copper: pieces of 2 ſols, and of 6 liards.

Of copper: the ſol of 4 liards; the half ſol; and the liard of 3 deniers.

The coinage of gold and ſilver was regulated as follows:

A marc of gold of the purity of 22 carats, incluſive of 15 grains for the remedy of the weight, and of $\frac{12}{32}$ of a carat for the remedy of the alloy, was coined, after the year 1726, into 30 louis of 24 livres each; but the ſame marc, incluſive of ſimilar remedies, was coined, after the year 1785, into 32 louis of 24 livres.

A marc of ſilver of the purity of 11 deniers, incluſive of 36 grains for the remedy of the weight, and of $\frac{1}{8}$ of a denier for the remedy of the alloy, was coined, after the year 1726, into $8\frac{3}{10}$ écus, and the other coins in the ſame proportion.

The marc for weighing gold and ſilver conſiſted of 8 ounces, 64 gros, 192 deniers, or 4608 grains.

In the aſſaying of gold, the marc was divided into 24 carats, or 768 grains; and in the aſſaying of ſilver, into 12 deniers, or 288 grains.

The ounce, for weighing diamonds and pearls, was compoſed of 144 carats, or 576 grains.

The apothecaries made uſe of a pound which they divided into 2 marcs, 12 ounces, 96 drachms, 288 ſcruples, or 6912 grains.

The pound, poids de marc, conſiſted of 2 marcs, 16 ounces, 128 gros, or 9216 grains.

The *tonneau de mer* was 2000 pounds, and the quintal 100.

As the meaſures uſed in the principal cities of France differed from each other, they are deſcribed in this work under the heads of Bayonne, Bordeaux, Dunkirk, Liſle, Lyons, Marſeilles, Montpelier, Nantes, Paris, Rochelle, Rouen, St. Malo, Straſburgh, and Toulon.

The *lieue de poſte* was 2000 toiſes; the *lieue terreſtre* 2288,33; the *lieue marine* 2850,41; and the *lieue moyenne* 2565,37.

The toiſe was 6 pieds, and the pied, generally denominated *pied de roi*, 12 pouces, or 144 lignes.

The aune of France was 44 pouces, or 528 lines.

The arpent *des eaux et forêts* was 100 perches, $1344\frac{4}{9}$ toiſes carrés, or 48400 pieds carrés; and the perch of 22 pieds was 484 pieds carrés.

Preſent Syſtem.

Accounts are kept in francs, each franc conſiſting of 100 centimes.

The coins of France are as follow :

Of gold : pieces of 40 and 20 francs each.

Of ſilver : pieces of 5, 2, and 1 franc ; of $\frac{3}{4}$, $\frac{1}{2}$, and $\frac{1}{4}$ franc.

Of copper : pieces of 2 and 1 decime ; of 5, 3, 2, and 1 centime.

The coinage of gold and ſilver is regulated as follows:

It was enacted by a law of the 28 Thermidor, 3d year (15 Auguſt, 1795), that the franc, or money-unit of France, ſhould be divided into 10 equal parts, called *decimes,* and each tenth into 10 hundredths, called *centimes;* that pieces of ſilver ſhould be coined of one, two, and of five francs, containing 5 grammes, or at the rate of 5 grammes, for each franc, of which 9 parts to be of pure metal and 1 part of alloy ; that the tolerated ſtandard ſhould not exceed the preſcribed ſtandard by more than 7 milliemes, or be more than 7 milliemes under the ſame ſtandard ; and that the tolerated weight ſhould not be more than $\frac{1}{200}$ above, or leſs than $\frac{1}{200}$ under, the weight preſcribed.

The only pieces which have been coined in purſuance of the law referred to are thoſe of 5 francs. The maximum of the weight of each is 25,125 grammes, and its minimum 24,875. The maximum of the ſtandard of each is 907 milliemes, and its minimum 893. A piece of 5 francs, of reputed mean weight and ſtandard, would contain, therefore, 25 grammes of ſilver of the purity of 900 milliemes, or 22 grammes 5 decigrammes of fine ſilver.

By a ſubſequent law of the 25 Germinal, 4th year, it was enacted that the pieces of 5 francs, of the coinage of the Republic, ſhould be received for 5 livres 1 ſol 3 deniers tournois; whence the numeral equivalence of the livre and of the franc, which had till then ſubſiſted, was neceſſarily deſtroyed, and the value of the franc in reſpect to the livre was eſtabliſhed in the proportion of 80 to 81.

It may not be unintereſting to examine whether or not ſuch relation be correct.

We have already ſeen that the piece of 5 francs contains 22 grammes 5 decigrammes of fine ſilver; whence it follows that the franc contains 4 grammes 5 decigrammes of pure metal.

Now, ſuppoſing that the remedy of the weight had been uſed ſo as to reduce the marc of ſilver to 4578 grains, and that its ſtandard were alſo reduced, by means of its relative allowance, to 10 deniers 21½ grains, it follows that the ſame marc would contain 4156,76 grains of fine ſilver, which, if coined into $8\frac{3}{10}$ crowns, would conſtitute the weight of the crown at 500,81 grains, being equivalent to 26 grammes 6 decigrammes. Hence the livre tournois, conſidered as the ſixth part of the crown, would contain 4 grammes 4⅓ decigrammes.

By comparing, therefore, the quantity of fine ſilver in a franc with what ſhould be contained in a livre tournois, if there were any coin of that ſpecific denomination, it would be found that the piece of 5 francs would be of the value, intrinſically, of 5 livres 1 ſol 6 deniers, or 101 ſols 6 deniers, according to the following proportion:

4,4⅓ value of a livre : 4,5 value of a franc :: 100 ſols : 101,50.

Thus the proportion of the franc to the livre, eſtabliſhed by law, was leſs than the actual proportion; and it was perhaps introduced upon a ſuppoſition that the farmers of the mints did not avail themſelves of the remedy of the mint and of the remedy of the law to the extent above mentioned.

By a decree which paſſed the Legiſlative Body on the 9th of Germinal, 11th year (30th March, 1803), and which is the laſt upon the ſubject, the new gold coinage was appointed to be of 40 and 20 franc pieces; the ſilver to be of the diviſion already mentioned.

The gold and ſilver coins are of nine-tenths pure metal and one-tenth alloy.

The effective weight of theſe monies is as follows:

The gold 40 franc piece . . . 12,90 grammes
The gold 20 franc piece . . . 6,45 ditto
The ſilver 5 franc piece . . . 25 . . ditto.

The kilogramme of fine gold is received in the ſeveral mints in exchange for 3434 francs 44 cents, and the kilogramme of fine ſilver for 218 francs 88 cents: whence the proportion between gold and ſilver is very nearly as 1 to $15\frac{5}{7}$.

The weights and meaſures enacted to be eſtabliſhed by the decree of the National Convention of the 18 Germinal, 3d year (7th April, 1795), are founded upon an invariable baſis, being that of a tenth part of the diſtance from the pole to the equator; that is, a tenth part of a quadrant of the terreſtrial meridian, which is equivalent to 5,130,740 fathoms, or 30,784,440 feet of France. The meaſure, therefore, which has thus been adopted as the univerſal ſtandard, is that of the ten-millionth part of the ſame diſtance, which, according to the antient menſuration, correſponds with 36 inches 11 lines 296 thouſandths of a line; and the denomination given to this new unit is that of *metre.*

The metre is the elementary meaſure of every other meaſure.

The metre, conſidered longitudinally, is the element of every rectilineal meaſure.

The ſquare metre is the element of ſuperficial meaſure.

The cubic metre is the element of the meaſures of capacity.

A cubic metre of water condenſed from vapour, weighed *in vacuo,* and by this means reduced to its greateſt denſity, weighs 2042 pounds 14 ounces 14 grains of France; and it is the millionth part of the weight of the ſame cubic metre which has been taken as the baſis of every other meaſure, and is called *gramme.*

By the word gramme is therefore meant the weight of a cubic centimetre of water.

The new weights and meaſures are denoted by four elementary words, or by words expreſſive of the characteriſtic of each of ſuch elementary words, and, at the ſame time, of the decimal ſubdiviſion or decimal collection of the quantities referred to.

The elementary words are, *metre, are, litre,* and *gramme.*

The compoſite words are formed by prefixing *deci, centi,* and *milli,* in reſpect to decimal ſubdiviſion, and by prefixing *deca, hecto, kilo,* and *myria,* in reſpect to decimal collection. The three former are to be conſidered as diviſors, and the four latter as multiples, all applicable to each elementary weight, and to each elementary meaſure; an eſſential and uſeful property of this mode of computation, being that of preſerving the generical word, in the expreſſion of all the modifications of quantity.

It will be obſerved, that the word *deci* means a tenth of the thing ſpoken of; *centi* an hundredth; and *milli* a thouſandth.

In like manner, the words *deca, hecto, kilo,* and *myria,* mean, reſpectively, ten times, a hundred times, a thouſand times, and ten thouſand times, the thing ſpoken of.

The myriagramme, in reſpect to weights, is 10 kilogrammes, 100 hectogrammes, 1000 decagrammes, 10000 grammes; and the gramme, or the unit of weights, is 10 decigrammes, 100 centigrammes, 1000 milligrammes.

The myrialitre, in reſpect to meaſures of capacity, is 10 kilolitres, 100 hectolitres, 1000 decalitres, 10000 litres; and the litre is 10 decilitres, 100 centilitres, 1000 millilitres. The litre is the unit of meaſures of capacity, and its capacity is equal to that of a cubic decimetre.

The myriametre, in reſpect to meaſures of length, is 10 kilometres, 100 hectometres, 1000 decametres, 10000 metres; and the metre, or unit of thoſe meaſures, is 10 decimetres, 100 centimetres, or 1000 millimetres.

The myriare, in reſpect to ſuperficial meaſure, is 10 kiloares, 100 hectares, 1000 décares, 10000 ares; and the are, or unit of thoſe meaſures, is 10 déciares, 100 centiares, 1000 milliares. The centiare is a ſquare metre.

Relation of the late and preſent Weights and Meaſures.

The tonneau de mer is	97,90	myriagrammes
The quintal	48,95	kilogrammes
The pound	489,50	grammes
The muid of Paris	2,742	hectolitres
The pinte ditto	0,952	litre
The boiſſeau ditto	1,269	décalitre
The litron ditto	0,793	litre
The lieue terreſtre	0,444	myriametre
The lieue marine	0,556	ditto
The lieue moyenne	0,5 . .	ditto
The toiſe	1,949	metre
The pied de roi	3,248	decimetres
The pouce ditto	2,706	centimetres
The ligne ditto	2,256	millimetres
The aune of 528 lignes	1,191	metre
The aûne of 526⅚ ditto	1,188	ditto
The aune of 524 ditto	1,182	ditto
The arpent of France	0,51	hectare
The arpent of Paris	0,342	ditto

The myriagramme is	0,2043	quintal
The kilogramme	2,043	livres
The gramme	18,827	grains
The hectolitre	0,365	muid of Paris
The litre	1,05	pinte ditto
The decalitre	0,788	boiſſeau ditto
The litre	1,26	litron ditto
The myriametre is	2,25	lieues terreſtres
	1,8	lieue marine
	2	lieues moyennes

The metre is 443,296 lignes; 36,941333 pouces; 3,078444 pieds; 0,513 toiſe; 0,839 aune of 528 lignes; 0,841 aune of 526⅚ lignes; 0,846 aune of 524 lignes.

The hectare is 1,958 arpent of France; 2,925 arpens of Paris.

FRANCFORT ON THE MAINE.

Accounts are kept at Francfort, Darmſtad, Hanau, and Mentz, in thalers, each thaler conſiſting of 90 kreutzers, and each kreutzer of 4 pfenings; or otherwiſe in guldens of 60 kreutzers, or 240 pfenings.

The ſpecie reichſthaler is 1⅓ current thaler, 2 guldens, 6 kopfſtucke, 30 batzen, 40 kayſergroſchen, 60 albus, 120 kreutzers, 480 pfenings.

3 ſpecie reichſthalers make 4 current thalers
2 current thalers . . . . 3 guldens
3 batzen . . . . 4 kaiſer groſchen.

The coins of Francfort are as follow:

Of gold: the ducat of 2 thalers and 70 current kreutzers.

Of ſilver: the reichſthaler eſpecie de conſtitution of 2 guldens 13 kreutzers; the reichſthaler eſpecie de convention of 2 guldens; the gulden of 60 kreutzers; the half and quarter gulden of proportionate value.

Of ſilver and copper: the kopfſtucke of 20 kreutzers; the pieces of 10 and 5 kreutzers; the kreutzer of 4 hellers.

Since the year 1765, the only currency at Francfort in which bills of exchange have been paid is that called *convention money*.

The marc of Cologne is uſed at Francfort for weighing precious metals.

A centner is compoſed of 100 pounds, and a ſtein of 22.

The pound conſiſts of 2 marcs, 16 loths, 128 quintins, 512 pfenings, or 1024 hellers.

A malter or achtel of corn meaſures 4 ſimmers, 8 metzes, 16 ſechſters, or 64 geſcheids.

A ſtuck of wine contains 1¼ fuder, 7½ ohms, 150 viertels, 600 maas, or 2400 ſchoppen.

Three ells are uſed at Francfort; the ell of Paris for meaſuring French goods; the Flemiſh ell for thoſe of Holland; and the ell of Francfort for thoſe of Germany.

5 ells of Paris make 11 ells of Francfort, 41 of which are equal to 32 of Brabant.

The foot of Francfort is equal to that of Hamburgh.

GALICIA.

In this province of Spain, accounts are kept in reals of vellon, each real conſiſting of 34 maravedis.

All the other Spaniſh coins are current without any diſtinction.

The pound, which is denominated *libra Gallega*, conſiſts of 20 ounces of Caſtille; wherefore

4 pounds of Galicia make 5 pounds of Caſtille.

The quintal of 4 arrobas, or 100 pounds of Galicia, is 125 pounds of Caſtille.

The fanega, dry meaſure of Galicia, is 4 ferrados.

The ferrado of Neda, a ſmall village near Ferrol, is generally uſed in Galicia: it is ⅓ of the fanega of Caſtille; wherefore

100 fanegas of Caſtille make 300 ferrados of Neda.

The ferrado of Neda and Ferrol is 12 per cent greater than that of Corunna.

100 ferrados of Ferrol make 112 ferrados of Corunna.

A moyo of wine contains 4 canadas, 16 ollas, 68 azumbres, or 272 quartillos, each quartillo weighing 20 ounces of wine.

100 quartillos of Caſtille make 85 quartillos of Galicia.

The vara and the foot of Caſtille are uſed in Galicia; but at Ferrol the vara is 2 per cent leſs.

GALLIPOLI.

In this ſea-port of the kingdom of Naples, accounts are kept in ducati, each ducato conſiſting of 100 grani.

All the coins of Naples are current at Gallipoli.

A ſalma of oil is compoſed of 100 ſtaje, or 320 pignatti. A pipe of oil meaſures $2\frac{4}{5}$ ſalme, and 11 ſalme are reckoned a laſt in reſpect to affreightment.

GENEVA.

Accounts are kept at Geneva in current livres, each livre conſiſting of 20 ſols, and each ſol of 12 deniers current; or otherwiſe in florins, each florin conſiſting of 12 ſols, and each ſol of 4 quarts, or 12 deniers.

The ecu, or crown current, is 3 livres, $10\frac{1}{2}$ florins, 60 ſols, 126 ſols of a florin, 504 quarts, 720 deniers, or 1512 deniers of a florin.

2 current ecus make 21 florins
2 ditto livres . . . . . 7 florins
10 ditto ſols . . . . . . 21 ſols of a florin
10 ditto deniers . . . . 21 deniers ditto.

The coins of Geneva are as follow:

Of gold: the old piſtole of 11 livres 10 ſols, or 40 florins 3 ſols; the new piſtole, coined ſince the year 1752, weighing 106 grains of the purity of 22 carats, and worth 10 livres, or 35 florins.

Of ſilver: the bajoir of 3 livres 15 ſols, or 13⅛ florins; the ecu, or patagon, of 3 livres, or 10½ florins.

Of ſilver and copper: the pieces of 10 and 5 ſols; of 21, and 10½ ſols of a florin.

The marc, for weighing precious metals, conſiſts of 8 ounces, 64 gros, 192 deniers, or 4608 grains. It correſponds with 4617 grains of France, and is therefore equivalent to 3787¾ grains troy-weight.

In the aſſaying of gold, the ounce is divided into 24 carats, and the carat into 24 or 32 parts.

In the aſſaying of ſilver, the marc conſiſts of 12 deniers, and the denier of 24 grains.

The pound, *poids fort,* for weighing groſs articles, is 18 ounces, or 432 deniers.

The pound, *poids foible,* for weighing ſilk, and ſome other valuable articles, is 15 ounces, or 360 deniers.

5 pounds poids fort make 6 pounds poids foible.

A coupe of wheat weighs about 110 pounds poids fort.

A char of wine is compoſed of 12 ſetiers, or 576 pots; and the ſetier is divided into 24 quarterons, or 48 pots.

The ell of France is uſed as well as the ell of Geneva. 100 ells of France make 104 ells of Geneva.

GENOA.

Accounts are kept at Genoa in lire fuori di banco, each lira conſiſting of 20 ſoldi, and each ſoldo of 12 denari di lira.

The ſcudo d'oro is 20 ſoldi, or 240 denari d'oro.

The ſcudo d'oro marche is 20 ſoldi, or 240 denari d'oro marche.

The difference between thoſe ſcudi is about 1 per cent; for

5814 ſcudi d'oro make 5875 ſcudi d'oro marche.

The ſcudo d'argento is 20 ſoldi, or 240 denari d'argento, and worth 7 lire 12 ſoldi banco, 4 lire 10 ſoldi moneta di cartulario or di numerato, or 7 lire 4 ſoldi moneta di paghe.

Bank money is 15 per cent better than current money; wherefore

100 lire banco make 115 lire fuori di banco.

100 ſcudi d'oro are equal to $122\frac{2}{5}$ ſcudi d'argento; whence a ſcudo d'oro is 9 lire 6 ſoldi $0\frac{72}{125}$ denaro banco, or 10 lire 13 ſoldi $11\frac{289}{625}$ denari fuori di banco; but, in order to avoid this large fraction, the ſcudo d'oro is reckoned 10 lire 14 ſoldi fuori di banco.

The piaſtra, or pezza, conſiſts of 20 ſoldi, or 240 denari di pezza, and is worth 5 lire banco, or $5\frac{3}{4}$ lire fuori di banco.

The ſcudo di cambio is 20 ſoldi, or 240 denari di cambio, and worth 4 lire banco, or $4\frac{3}{5}$ lire fuori di banco.

Since the ſuppreſſion of the Bank of St. George in 1746, banco money has alſo been denominated *moneta di permeſſo*; and as the moneta di permeſſo is 15 per cent higher in value than the moneta fuori di banco, in which accounts are kept, it is neceſſary, in drawing upon Genoa, to inſert the words *fuori di banco* in the body of the bill, which would otherwiſe be paid in moneta di permeſſo.

The value of the coins of Genoa in moneta fuori di banco is as follows:

Of gold: the doppia of 23 lire 12 ſoldi; the ſcudo d'oro of 11 lire 16 ſoldi; the zecchino of 13 lire 10 ſoldi.

Of ſilver: the ſcudo d'argento, or *Genovina,* of 9 lire 10 ſoldi, and only of 9 lire when under the weight of 32⅛ denari; the ſcudo di cambio, or *St. Gianbatiſta,* of 5 lire; the Giorgino of 1 lira 6 ſoldi.

Of ſilver and copper: pieces of 10, 8, and 5 ſoldi banco; or 12½, 9⅕, and 6¼ ſoldi fuori di banco; the Madonina of 20 ſoldi; the double Madonina of 40 ſoldi; the cabaletto of 6⅔ ſoldi.

The pound, *peſo ſottile,* for weighing precious metals, weighs, according to Mr. Tillet, 5970 grains of France, which are equivalent to 4897⅔ grains troy-weight. It conſiſts of 12 oncie, the oncia of 24 denari, and the denaro of 24 grani; whence the pound is 6912 grains.

In the aſſaying of gold, the pound is divided into 24 carati, the carato into 8 ottavi; and in the aſſaying of ſilver, into 12 oncie, the oncia into 24 denari.

Gold in bars is ſold at the rate of 1312 lire 2 ſoldi fuori di banco per pound fine, excluſive of an agio either above or below that price.

Silver in bars is ſold at the rate of 84 lire 8 ſoldi fuori di banco per pound fine, excluſive of an agio either above or below that price.

Spaniſh dollars are ſold for a certain number of lire fuori di banco per ounce weight.

Previouſly to the extenſion of the revolution in France to the Republic of Genoa, gold was ſold in lire di permeſſo, ſilver in lire moneta di cartulario, and Spaniſh dollars in lire moneta di paghe.

The weight and ſtandard of the coins of Genoa are as follow:

	Weight.		Standard.	
The dopia is ……	6 denari	2⅔ grs	21¾ carats	
The zecchino …..	3 ditto	4 ditto	23⅞ ditto	
The ſcudo d'argento	34 ditto	21⅚ ditto	11 oncie	12 denari
The ſcudo di cambio	18 ditto	22 ditto	11 ditto	1 ditto
The Giorgino …..	5 ditto	8⅘ ditto	10 ditto	8 ditto.

The pound, *peſo groſſo*, for weighing rough goods, weighs, according to Mr. Tillet, 5981 grains of France, which correſpond with 4906⅔ grains troy-weight. It is divided in the ſame manner as the pound peſo ſottile, than which it is but little heavier.

The cantaro is 100 rotolos, or 150 pounds peſo groſſo.

The rubbo is 25 pounds, and the rotolo 1½.

There are three other weights uſed at Genoa.

The pound, for weighing raw ſilk by the public ſcale, which is 6¼ per cent heavier than the pound peſo groſſo.

The cantaro of 100 rotolos, uſed at the cuſtom-houſe.

The rotolo, *peſo di caſſa*, for weighing Spaniſh dollars, and other coins, which is 10 per cent leſs than the cuſtom-houſe rotolo.

A mina of corn meaſures 8 quartere, or 96 gombette.

A mondino of ſalt correſponds with 8 mine of wheat.

A mezzarola of wine contains 2 barrili, or 100 pinti.

A barrile of oil is 2 mezzi-barrili, or 7½ rubbi.

Several meaſures are uſed at Genoa for cloths, ſilk ſtuffs, and linen: the canna groſſa of 10½ palmi; the canna of 10 palmi; the canna piccola of 9 palmi; the braccio of 2⅓ palmi.

GOA.

Accounts are kept at Goa in pardos of 240 reis.

The pardo is alſo divided into 4 boms tangas, 5 malos tangas, 16 boms vintems, 20 malos vintems, 300 boms bazarucos, and 360 malos bazarucos.

The coins of Goa are as follow:

Of gold: the St. Thomas, worth about 11 boms tangas, and weighing 53½ grains troy-weight, of the purity of 18 carats.

Of ſilver: the pardo-ſeraſin of 5 boms tangas, or 300 reis; the pardo of 4 boms tangas, or 240 reis,

Independently of the weights of Portugal, they make uſe at Goa of the following Indian weights:

The maund, which correſponds with 12 pounds of Portugal, and ſerves for weighing oil and butter.

The bahar, which is 3½ quintals of Portugal, and ſerves for weighing pepper and grocery.

The candy, which correſponds with 495 pounds avoirdupois, conſiſts of 20 maunds, and the maund of 24 medidas, which are employed for meaſuring corn and rice: rice is alſo ſold by the fardo, weighing 3½ maunds.

The vara and the covado of Goa are equal to thoſe of Portugal.

GOMBROON.

In this city of Aſia, ſituate in a bay of the Streight of Ormus, accounts are kept in mamudis of 20 gaſas.

The toman is 20 current mamudis, and the new baſi, or abbaſi, 2.

The other coins are referred to under the head of Perſia.

Two ſorts of maund are uſed at Gombroon.

The heavy maund for weighing proviſions, and the little maund for weighing rough goods.

Cloth is meaſured by the gueze, 93 of which make 100 yards.

GUINEA.

On the coaſt ſo called, and in ſeveral other parts of Africa, the inhabitants, inſtead of coins, make uſe of ſmall ſhells, called by the Europeans *cowries*, or *cauris*, and by the Africans *zimbis*, 2000 of which make 1 macuta.

Gold duſt is generally ſold to foreign traders by the akey, which correſponds with 20$\frac{1}{32}$ grains troy-weight.

The benda, or weight uſed by the negroes, correſponds with 989$\frac{1}{2}$ grains troy-weight, and is compoſed of 2 benda-offas, 3 eggebas, 8 piſos, or euſanos.

The ſeron is 1$\frac{1}{2}$ piſo; and the piſo is divided into 1$\frac{1}{3}$ quintos, 2 agiraques, or 4 media-tablas.

Linen is meaſured by the jactam.

HAMBURGH.

Accounts are kept at Hamburgh in marcs, each marc conſiſting of 16 ſhillings, and each ſhilling of 12 pfenings lubs.

The *reichſthaler,* or rixdollar, is 3 marcs, 48 ſhillings, or 576 pfenings.

The thaler is 2 marcs, 32 ſhillings, or 384 pfenings.

The *pfund Flemiſch,* or pound Flemiſh, is 20 ſhillings Flemiſh, or 240 grotes Flemiſh.

A pound Flemiſh is $2\frac{1}{2}$ rixdollars, $3\frac{3}{4}$ thalers, $7\frac{1}{2}$ marcs, 20 ſhillings Flemiſh, 120 ſhillings lubs, 240 grotes Flemiſh, 720 dreylings, or 1440 pfenings lubs.

4 pounds Flemiſh make 10 rixdollars, or 30 marcs
2 rixdollars . . . . 3 thalers, or 6 marcs
8 ſhillings Flemiſh . . . 3 marcs, or 48 ſhillings lubs.

Theſe monies are diſtinguiſhed by the appellation of bank money and current money.

Bank money formerly conſiſted of the old ſpecie rixdollars of Germany, which obtained 1 per thouſand upon the bank rixdollars; that is, thoſe who depoſited 1000 ſpecie rixdollars were credited by 1001 bank rixdollars.

The funds of the Bank conſiſt not, as formerly, of ſpecie, but of ingots of ſilver, which are required to be of the purity of 15 loths 12 grains, or $\frac{47}{48}$ fine. Thoſe who depoſit ſuch ingots, are credited by the amount, in the books of the Bank, at the rate of 27 marcs 10 ſhillings banco for each marc of the ſame ſilver, the whole of which will be re-delivered on demand, without any reference to the time which may have elapſed ſince the date of the depoſit, upon payment of 27 marcs 12 ſhillings banco for each marc of the weight regiſtered; which is 2 ſhillings per marc more than the ſum advanced, the value of the difference being applied to the purpoſe of defraying the charges at the Bank.

The intrinſic value of bank money is $23\frac{1}{13}$ per cent better than current money, which is compoſed of the effective coins of Hamburgh; but the difference or agio between bank money and current money varies according to circumſtances.

Light money, or *leichter-geld,* conſiſts of foreign coins, the value of which is ſubject to variations.

The coins of Hamburgh are as follow:

Of gold: the portugalœſe of 10 ducats; the half and the quarter portugalœſe, each of proportionate value; the ducat, worth about 6 marcs banco.

Of ſilver: the old ſpecie rixdollar, worth about 3 marcs 11 ſhillings lubs; the thaler of 2 marcs lubs; the marc of 16 ſhillings lubs.

Of ſilver and copper: pieces of 8, 4, 2, 1, $\frac{1}{2}$, $\frac{1}{4}$ ſhilling lubs.

A marc of gold, of the purity of 23 carats 8 grains, is coined into 67 ducats.

A marc of fine ſilver is coined into 17 thalers, or 34 marcs; and a marc of ſilver, of the purity of 12 loths, is coined into $12\frac{3}{4}$ thalers, or $25\frac{1}{2}$ marcs.

The marc, for weighing precious metals, conſiſts of 8 ounces, 16 loths, 64 quintins, 256 pfenings, or 4352 eſchen.

In the aſſaying of gold, the marc is divided into 24 carats, the carat into 12 grains; and in the aſſaying of ſilver, into 16 loths, the loth into 18 grains.

Diamonds and pearls are weighed by carats of 5 grains each.

The carat is alſo divided into 4, 8, 16, 32, and 64 parts.

71 carats weigh 1 loth of Hamburgh, which correſponds with 225½ grains troy-weight; wherefore the carat uſed at London is ſomewhat heavier than that of Hamburgh.

100 carats of London make 100¾ carats of Hamburgh.

Apothecaries make uſe of a weight common to Germany in general, which they divide into 12 ounces, 96 drachms, 288 ſcruples, or 5760 grains.

The pound, commercial weight, conſiſts of 16 ounces, 32 loths, 128 quintins, or 512 pfenings.

The ſchipfund is 2½ centners, 20 liſpfunds, or 280 pounds.

The centner is 112 pounds, and the liſpfund 14.

The ſchipfund, uſed in reſpect to the carriage of goods, is compoſed of 20 liſpfunds, or 320 pounds; and the liſpfund of 16 pounds.

The ſchipfund, for weighing wool and feathers, is 28 ſteins, or 280 pounds; and the ſtein, or ſtone, 10 pounds.

The ſchipfund, for weighing flax, is 14 ſteins, or 280 pounds; and the ſtein 20 pounds.

A laſt of wheat, rye, and peaſe, meaſures 3 wiſpels, 30 ſcheffels, 60 faſs, 120 himtens, or 480 ſpints.

The laſt of oats and barley is only 2 wiſpels, which are equal to 3 wiſpels of wheat.

A ſtock of barley is 1½ laſt, 3 wiſpels, 30 ſcheffels, 90 faſs, 180 himtens, or 720 ſpints.

A fuder of wine is compoſed of 6 ahms, 24 ankers, 30 eimers, 120 viertels, 240 ſtubgens, 480 kanen, 960 quartiers, or 1920 oeſſels.

A tun of fiſh oil conſiſts of 2 barrels, each barrel of 32 ſtubgens.

A tonne of beer is 48 ſtubgens.

A mile is 24000 Rheniſh feet.

The morgen, land meaſure, is 120 ruthes long and 5 wide; the ruthe is 8 ells, and the klafter 3.

The faden, or fathom, is 80 ſquare zollen, or inches.

An ell of Hamburgh is 2 feet, 4 quarters, or 24 inches.

HANOVER.

Accounts are kept in this Electorate in thalers, each thaler conſiſting of 36 marien groſchen of 8 pfenings each.

The other coins are the ſame as thoſe of Brunſwick, and are deſcribed under that head.

The coins of Hanover are as follow:

Of gold: the George of 4⅔ thalers; the ducat of 2⅔ thalers; the gold gulden of 2 thalers; the double, the half, and the quarter gulden, each of proportionate value.

Of ſilver: the ſpecie reichſthaler of 48 marien groſchen; the zweydrittel-ſtucke of 24 marien groſchen; the half and quarter piece of that name, and of proportionate value.

The marc of Cologne is uſed for weighing precious metals, ſilk, and camels' hair.

In the aſſaying of gold, the marc is divided into 24 carats, the carat into 12 grains; and in the aſſaying of ſilver, into 16 loths, the loth into 18 grains.

A marc of gold of the purity of 23 carats 8 grains is coined into 67 ducats.

A marc of gold of the purity of 18 carats 10 grains is coined into 72 guldens.

A marc of ſilver of the purity of 14 loths 4 grains is coined into 8 ſpecie reichſthalers; wherefore

9 reichſthalers make 1 marc fine.

The proportion between gold and ſilver is as 1 to $15\frac{1}{10}$.

The pound conſiſts of 2 marcs, 16 ounces, 32 loths, 128 quintins, or 512 oertjens.

The pfund ſchwer is compoſed of 3 centners, or 336 pounds; and the centner is 112 pounds.

The ſchipfund is 20 liſpfunds, or 280 pounds; and the liſpfund 14 pounds.

A ſteine of flax is 20 pounds, and of wool 10.

A laſt of corn meaſures 2 wiſpels, 16 malters, or 96 himtens of Brunſwick.

A fuder of wine contains 4 oxhofts, 6 ahms, 15 eimers, 24 ankers, 240 ſtubgens, 480 kannen, or maas, 960 quartiers, or 1920 nœſſels.

A tonne or barrel of honey is 25½ ſtubgens, and weighs 300 pounds.

A faſs of beer is 104 ſtubgens, or 208 kannen.

A mile of Hanover is 2274 ruthes of Zell.

The ruthe is 16 feet, or 192 inches.

The morgen, land meaſure, is 120 ſquare ruthes.

An ell is 2 feet, 24 inches, or 288 lines.

HEIDELBERG.

In this city, and in all the Palatinate of the Rhine, accounts are kept in guldens, each gulden conſiſting of 60 kreitzers, and each kreitzer of 4 pfenings.

The gulden is alſo divided into 15 batzes, 20 groſchen, or 30 albus.

The thaler is 1½ gulden, 45 albus, or 90 kreitzers.

The coins of the Palatinate are as follow:

Of gold: the carolin of 10 guldens 42 kreitzers; the half carolin of proportionate value; the gold piece of 5 thalers, or 7½ guldens; the Imperial ducat of 4 guldens 48 kreitzers.

Of ſilver: pieces of 24, 20, 15, 10, 4, and 2 kreitzers, of the ſame value as convention-money.

A malter of corn meaſures 4 ſimmers, 8 meſtens, 16 ſechters, or 62 geſcheids.

The fuder is compoſed of 10 ahms, 120 viertels, or 480 mas.

HILDESHEIM.

In this city of Lower Saxony, accounts are kept in thalers, each conſiſting of 36 marien groſchen, and each of 8 pfenings.

The coins are, pieces of ⅔ thaler; of 24, 12, 6, 3, and 1½ marien groſchen; and the Matthews of 4 and 2 pfenings.

The marc of Cologne is uſed at Hildeſheim.

The ſchipfund conſiſts of 20 liſpfunds, or 280 pounds; the centner of 110 pounds; the liſpfund of 14; and the ſtein of 10.

The pfund ſchwer is 300 pounds, and the wage 120.

A laſt of corn meaſures 13⅓ malters, 40 ſcheffels, or 80 himtens.

A fuder of wine is 4 oxhofts, 6 ahms, 120 viertels, 240 ſtubgens, 960 quartiers, or 1920 oeſſels.

An oxhoft of fiſh oil is 2 tonne, 12 ſtechkanen, or 192 mingels.

The morgen, land meaſure, is 120 ſquare ruthes; and the ruthe is 8 ells, or 16 feet.

HUNGARY.

All the Auſtrian coins are current in Hungary.

The ſpecie reichſthaler, called by the Hungarians *egiſthaler,* is worth 2 guldens, 20 chuſtaken, or 40 caſzarſgaras.

The current thaler, or *egymagiartaller,* is 1½ gulden, or 15 chuſtaken.

The reichs gulden, *egyforinth,* or *nemeczky-zlaty,* is divided into 10 chuſtaken, 20 caſzarſgaras, 40 polturas, 60 kreitzars, 100 penz-kraſlowſzki, 240 pfenings of the Rhine, and 720 babkas.

The uherſzki-zlaty . . . is	17½	caſzarſgaras;
The pul zlaty	10	ditto;
The ſeſztak, or mariaſz . .	17	kreitzars;
The hetes, or ſzedmak . .	7	ditto.

The caſzarſgara of 4 pataz is worth 6 garas of Upper Hungary, and 5 garas of Lower Hungary.

The gold ducat of Kremnitz is 4⅕ reichs guldens; and the letters K. B., which are ſtamped on each ducat, are the initials of the words *kermecz* and *banya,* and refer to the mines of Kremnitz.

A marc of gold of the purity of 23 carats 9 grains is coined into 67 ducats.

A marc of fine ſilver is coined into 25 guldens, compoſed of pieces of ½ caſzarſgara, polturas, kreitzars, and caſzars.

The ſame marc is alſo coined into 30 guldens, each gulden compoſed of pieces of 1 pfening, or 3 babkas.

The other monies, as well as the weights and meaſures of Hungary, will be found under the head of Vienna.

JAMAICA.

Accounts are kept in Jamaica, and in the other Weſt India iſlands belonging to Great Britain, in pounds currency, each conſiſting of 20 ſhillings, and each ſhilling of 12 pence currency.

Sterling money is 40 per cent better than currency; whence

100 pounds ſterling make 140 pounds currency.

It is obſervable, that, while the ratio is permanent for the reduction of ſterling into currency, the ratio is variable for the reduction of currency into ſterling. The former is readily effected by multiplying by 7, and then dividing by 5.

The guinea is current for 30 ſhillings; the crown for 7 ſhillings; the Spaniſh piſtole for 24 ſhillings; the hard dollar for 6 ſhillings 3 pence; the bitt, or Spaniſh real, for 7½ pence: the value, however, of ſuch coins is ſubject to variation, according to circumſtances.

A hundred weight makes 100 pounds, each of which is equal to the pound avoirdupois of England.

In reſpect to the meaſures, ſee England.

JAPAN.

Accounts are kept in Japan in taels, teels, or tayes, each tael conſiſting of 10 mas, and each mas of 10 kanderies, or conderies. The Dutch reckon the tael for 3½ current florins.

The currency of Japan conſiſts of ingots, the value of which is determined by their reſpective weights.

The oban is a gold ingot weighing 826 grains troy-weight, of the purity of 22 carats; the intrinſic value of which is about 14⅓ ducats, equivalent to 6 pounds 13 ſhillings 9 pence ſterling.

The coban, or coopang of gold, weighing 275 grains troy-weight, and of the purity of 22 carats, is worth 44 ſhillings 7 pence.

The jehebo is the ſmalleſt piece of gold which is current, and is worth about 8 ſhillings 8½ pence.

The ſilver currency conſiſts of bars of the purity of 11 ounces, and of different weights. The heavieſt bar weighs about 3479 grains troy-weight, and the ſmalleſt 85 grains.

The value of the former is 37½ ſhillings, and of the latter 11 pence.

The ſchuit is a ſilver coin, weighing 2370 grains troy-weight, of the purity of 11 ounces, and worth 25 ſhillings 6½ pence.

The caſh is a copper coin, 600 of which are 1 tael.

The Spaniſh dollar is worth about 74 conderies.

The pikul, or pecul, conſiſts of 100 cattis, and correſponds with 130 pounds avoirdupois.

A managoga of rice is 10000 ikmagogas.

An ikmagoga is compoſed of 1000 ikgogas, an ikgoga of 100 gantas, and a ganta of 3 cocas.

Cloths are meaſured by the inck, or tatamy.

KONIGSBERG.

Accounts are kept at Konigſberg in guldens, each gulden of 30 groſchen, and each groſchen of 18 pfenings, Pruſſian currency.

The thaler is 1½ zweydrittelſtucke, 3 guldens, 24 gute groſchen, 90 groſchen, 270 ſchillings, or 1620 pfenings.

The coins of Pruſſia, which are deſcribed under the head of Berlin, are current at Konigſberg.

The marc, for weighing precious metals, is the ſame as that of Dantzic.

The pound is the ſame as that of Berlin, which is denominated new weight of Pruſſia, and is 23 per cent heavier than the old weight of Konigſberg.

The ſchifpfund conſiſts of 3 centners, 20 liſpfunds, or 330 pounds new weight.

The centner is 110 pounds, and the liſpfund 16½.

There are two ſtein, or ſtone; the groſſe ſtein of 33 pounds, and the kleine ſtein of 20.

The pound is divided into 16 ounces, 32 loths, 128 quintins, or 512 pfenings.

A laſt of corn meaſures 24 tonnen, 56½ new ſcheffels, 60 old ſcheffels, 240 viertels, 960 metzens. The new ſcheffel of Berlin is at preſent uſed in Pruſſia.

The meaſures for liquids are the ſame as at Dantzic, except that the ſtof of Dantzic is 19⅗ per cent more capacious than that of Konigſberg.

The ell of Konigſberg is the ſame as that of Berlin.

The exchange buſineſs is conſiderable at Konigſberg, being the centre point between Ruſſia, Hamburgh, and Amſterdam.

The courſe of exchange is as follows:

London receives 19 guldens 4 groſchen, more or leſs, per pound ſterling.

Amſterdam receives 308 groſchen, more or leſs, per pound Flemiſh.

Hamburgh receives 135 groſchen, more or leſs, per rixdollar banco.

LEGHORN.

In this city of Italy, accounts are kept in pezze da otto reali, each pezza conſiſting of 20 ſoldi, and each ſoldo of 12 denari da otto reali.

The lira is 20 ſoldi, or 240 denari di lira.

The ſcudo d'oro is worth $7\frac{1}{2}$ lire, and divided into 20 ſoldi, or 240 denari d'oro.

The current ſcudo, alſo denominated ducato, ducatone, or piaſtra, is worth 7 lire, and divided into 20 ſoldi, or 240 denari di ducato.

The teſtono is 2 lire, 3 paoli, or reali, 24 crazie, 40 ſoldi di lira, 120 quatrini, or 480 denari di lira.

Theſe monies are diſtinguiſhed by the appellation of *moneta buona* and *moneta lunga* ; the former is $4\frac{8}{23}$ per cent of greater value than the latter ; whence

23 pieces moneta buona make 24 pieces moneta lunga.

The coins of Leghorn are the ſame as thoſe deſcribed under the head of Florence, and their reſpective value in moneta buona and moneta lunga is as follows :

	Moneta buona.	Moneta lunga.
The doppia is . .	23 lire	24 lire
The ruopono . .	40 ditto	41 ditto $9\frac{3}{4}$ ſoldi
The ſequino . . .	13 ditto $6\frac{1}{3}$ ſoldi	13 ditto 18 ditto
The pezza	5 ditto 15 ditto	6 ditto
The piaſtrina . .	1 ditto $8\frac{2}{3}$ ditto	1 ditto 10 ditto.

The pound, for weighing precious metals, conſiſts of 12 oncie, or ounces, 288 denari, or 6912 grani.

In the aſſaying of gold, the pound is divided into 24 carati, the carato into 8 octavi; and in the aſſaying of ſilver, into 12 oncie, the oncia into 24 denari.

Gold in bars is ſold per ounce fine, and ſilver in bars per pound fine; and the price of each is regulated in lire moneta buona.

Spaniſh dollars are ſold for ſo many pezze per pound weight; and 1000 dollars correſpond with 79 pounds 7 ounces of Leghorn.

The carato, for weighing diamonds, weighs 4 grani.

The pound, commercial weight, is 1 per cent heavier than the pound uſed for weighing precious metals.

The migliajo conſiſts of 10 centenaji, or 1000 pounds, and the centenajo of 100 pounds.

The cantaro, for weighing ſugar, ſtones, alum, and Engliſh cheeſe, is 150 pounds.

The cantaro, for weighing almoſt every other deſcription of goods, is 160 pounds.

The moggio, dry meaſure, is compoſed of 2 rubbi, 7½ ſacci, 22½ ſtaji, or 2880 buſſoli.

The rubbo is 1440 buſſoli, the ſacco 384, and the ſtajo 128.

A barile of wine contains 20 fiaſchi, 40 boccali, 80 mezzetti, or 160 quartuci.

A barile of oil is 16 fiaſchi, and weighs 85 pounds of Leghorn.

The ſeveral meaſures of Florence for cloth, linen, and ſtuffs, are uſed at Leghorn.

LEIPSIC.

Accounts are kept at Leipſic, at Dreſden, and in the Electorate of Saxony, in thalers, each conſiſting of 24 gute groſchen, and each gute groſchen of 12 pfenings currency.

The reichſthaler is 1⅓ current thaler, 2 reichs guldens, 32 gute groſchen, 384 pfenings, or 768 hellers.

The reichs gulden is 16 gute groſchen, the gulden of Miſnia 21, the old ſchock 20, and the new ſchock 60.

3 effective reichſthalers make 4 current thalers
2 current thalers . . . . 3 reichs guldens
7 ditto . . . . 8 guldens of Miſnia.

The coins of Saxony are as follow:

Of gold: the auguſt, coined ſince the year 1753, of 5 thalers; the double and the half auguſt, of proportionate value; the ducat, worth from 2¾ to 3 thalers; the gold gulden, worth from 2¼ to 2½ thalers.

Of ſilver: the ſpecie reichſthaler of 32 gute groſchen; the gulden, which is alſo called zweydrittelſtucke, of 16 gute groſchen.

Of ſilver and copper: pieces of 4, 2, and 1 gute groſchen; pieces of 6, 3, and 1 pfening.

The old coins of Saxony, ſtruck between the years 1690 and 1763, are denominated *conſtitution-money*. A marc of fine ſilver was then coined into 9 reichſthalers, 12 thalers, 18 reichs guldens, 36 half guldens, 72 quarter guldens; and the reſpective value of ſuch coins was of 32, 24, 16, 8, and 4 gute groſchen. The new coins of Saxony are denominated *convention-money*, becauſe they were ſtruck according to the convention which took place in 1763 between the principal members of the Germanic body; whence the currency of

Germany chiefly conſiſts of convention-money. In conſequence of ſuch convention, a Cologne marc of ſilver, of the purity of 13 loths 6 grains, is coined into $8\frac{1}{3}$ reichſthalers, and the other coins in the ſame proportion; ſo that 10 reichſthalers, $13\frac{1}{3}$ thalers, 20 reichs guldens, 40 half guldens, and 80 quarter guldens, are ſtruck from a marc of fine ſilver. And, as the value of thoſe coins is the ſame as that of the former coins, that is, of 32, 24, 16, 8, and 4 gute groſchen, being the preſent currency of Saxony, it follows that the proportion between conſtitution-money and convention-money is in the ratio of 10 to 9; whence

9 old reichſthalers make 10 new reichſthalers.

There has not been any alteration in reſpect to the gold coins, which are ſtill ſtruck according to the conſtitution of the empire.

A marc of gold of the purity of 23 carats 8 grains is coined into 67 ducats, each worth 2 old reichſthalers, or 2 reichſthalers 7 gute groſchen actual currency.

A marc of gold of the purity of 18 carats 10 grains is coined into 72 gold guldens, each worth 3 old guldens, or 3 guldens $5\frac{1}{4}$ gute groſchen actual currency.

The proportion between gold and ſilver in Saxony is as 1 to $15\frac{1}{10}$.

The marc of Leipſic and Dreſden, for weighing precious metals, is denominated marc of Cologne; but, according to Mr. Tillet, it is a little lighter, and correſponds with 3606 grains troy-weight.

In the aſſaying of gold, the marc is divided into 24 carats, the carat into 12 grains; and in the aſſaying of ſilver, into 16 loths, the loth into 18 grains.

The centner, commercial weight, conſiſts of 5 ſteins, or 110 pounds; but a centner of ſteel is 118 pounds.

The pound is divided into 2 marcs, 32 loths, 128 quintilins, or 512 pfenings.

A wiſpel of corn meaſures 2 malters, 24 ſcheffels, 96 viertels, 384 metzen, or 1536 mœſgen.

16 ſcheffels of Leipſic make 21 ſcheffels of Dreſden.

A fuder of wine contains 2⅔ faſs, 6 eimers, 756 kannen, or 1512 nœſſels.

An eimer of Leipſic is 63 kannen of Leipſic, or 81 kannen of Dreſden.

An eimer of Dreſden is 72 kannen of Dreſden, or 56 of Leipſic.

The ruthe of Saxony is 15⅙ feet of Leipſic; the klafter is 3 ells, or 6 feet; the ſtab 2 ells, or 4 feet.

An aker, or acre, is 300 ſquare ruthes.

The mile of Saxony is 2000 ruthes, and each ruthe 8 ells of Dreſden.

LIEBAU.

In this, as well as in the other cities of Courland, accounts are kept in albertus reichſthalers of 4 orts, or 80 ferdings.

The gulden is 30 groſchen, the groſchen 3 ſchillings, and the ſchilling 6 pfenings.

The ſchifpfund conſiſts of 20 liſpfunds, or 400 pounds.

A laſt of wheat, rye, barley, and peaſe, is 48 loofs; of oats and malt 60.

The other meaſures are the ſame as thoſe at Riga.

N. B. The old ſtyle is ſtill in uſe at Liebau.

LIEGE.

Accounts are kept at Liege in guldens, each gulden conſiſting of 20 ſtivers, and each ſtiver of 4 oertjes, or 16 pfenings.

The patacon is 4 guldens, 8 ſchillings, 80 ſtivers, 320 oertjes, or 1280 pfenings.

The coins of Liege are as follow:

Of gold: the ducat of 8½ guldens, or 17 ſchillings; the gold gulden of 5 current guldens.

Of ſilver: the patacon of 8¼ ſchillings; the ſchilling of 10 ſtivers; the blamuſe of 5 ſtivers.

The pound is 4 per cent leſs than that of Amſterdam.

A laſt of corn is 17 ſetiers.

The courſe of exchange is as follows:

Amſterdam receives 175 guldens, more or leſs, for 100 current florins.

Paris receives 50 ſtivers, more or leſs, for 3 francs.

LISLE.

In this city of France, accounts are kept either in francs and cents, or in livres, ſols, and deniers tournois. They are ſometimes, alſo, kept either in livres Flemiſh, each livre of 20 eſcalins, or 240 gros; or in florins, each florin of 20 ſtivers, and each ſtiver of 16 pennings.

The livre Flemiſh is 2½ écus, 6 florins, 7½ livres tournois, 20 eſcalins, 120 ſtivers, 150 ſols tournois, 240 gros, 1800 deniers tournois, or 1920 pennings.

The pound of Liſle is 14 ounces poids de marc of France.

A raziere of wheat weighs about 120 pounds poids de marc.

The lot, liquid meaſure, is 2⅕ pintes of Paris.

The ell is 26 inches of France.

The courſe of exchange is as follows :

		Uncertain Prices.		*Certain Prices.*
London	*rec.*	62 eſcalins	*for*	1 pound ſterling
Amſterdam	*rec.*	180 florins	*for*	100 florins banco
Antwerp	*rec.*	172 florins	*for*	100 florins of exch.
Idem	*rec.*	148 florins	*for*	100 current florins
Paris	*rec.*	96 gros	*for*	3 francs.

LUBEC.

In this city of Holſtein in Germany, accounts are kept in marcs, each marc conſiſting of 16 ſchillings, and each ſchilling of 12 pfenings lubs current.

The reichſthaler is 3 marcs, or 48 ſchillings ; and the thaler 2 marcs, or 32 ſchillings.

The other coins current at Lubec are the ſame as thoſe deſcribed under the head of Hamburgh ; and the ſame marc is uſed for weighing precious metals.

The ſchifpfund, commercial weight, conſiſts of 2½ centners, 20 liſpfunds, or 280 pounds.

The ſchifpfund, uſed in reſpect to the carriage of goods, is 320 pounds.

The centner is 112 pounds, and the liſpfund 14.

A ſtone of flax is 20 pounds ; and a ſtone of wool, or feathers, 10 pounds.

The pfund, or pound, which is ½ per cent lighter than that of Hamburgh, is compoſed of 2 marcs, 16 ounces, 32 loths, 128 quintins, or 512 pfenings.

A laſt of corn is 8 drœmts, 24 tonnen, 96 ſcheffels, or 384 fœſſers.

69 laſts of Lubec make 70 laſts of Hamburgh.

The fuder, liquid meaſure, contains 6 ahms, 120 viertels, 240 ſtubgens, 480 kannen, 960 quartiers, 1920 plankens, or 3840 ortes.

A tonne of beer meaſures 48 ſtubgens, or 192 quartiers.

The courſe of exchange is regulated in the ſame manner as at Hamburgh.

LUCCA.

Accounts are kept in this city of Italy either in lire, each lira conſiſting of 20 ſoldi, and each ſoldo of 12 denari; or in ſcudi d'oro, each ſcudo of 12 ſoldi, and each ſoldo of 12 denari d'oro.

The ſame ſcudo, which is alſo called ſcudo di cambio, is 7½ lire, or 150 ſoldi di lira.

The coins of Florence are current at Lucca.

The ſcudo d'oro of 7½ lire of Florence is worth 8¼ lire of Lucca; and the pezza da otto reali of Leghorn is worth 6⅕ lire of Lucca.

Two ſorts of pounds are uſed at Lucca, each conſiſting of 12 ounces.

The pound, peſo ſottile, for weighing ſilks; and the pound, peſo groſſo, for weighing almoſt every other deſcription of goods.

100 pounds peſo groſſo make 111½ pounds peſo ſottile.

Corn is meaſured by the ſtajo, and oil by the coppo.

Two meaſures are uſed for cloths, the braccio and the canna.

4 bracci make 1 canna.

LUNENBURG.

In this city of Lower Saxony, accounts are kept either in thalers, each thaler conſiſting of 24 gute groſchen, and each gute groſchen of 12 pfenings; or in thalers of 36 marien groſchen of 8 pfenings each.

The thaler is divided into 24 gute groſchen, 32 ſchwere ſchillings, 36 marien groſchen, 48 leichte ſchillings, 72 mathiers, 96 wittes, 288 pfenings, or 768 ſcheffens.

The coins are the ſame as thoſe of Hanover.

The weight of Lunenburg is nearly the ſame as that of Hamburgh.

215 pounds of Hamburgh make 214 pounds of Lunenburg.

A wiſpel of corn is compoſed of 20 ſcheffels, 40 himtens, or 160 ſpints.

The ell is 2 feet of Lunenburg.

The other meaſures are referred to under the head of Hanover.

LYONS.

In this city of France, accounts are kept either in francs and cents, or in livres, ſols, and deniers tournois.

The coins of France are current at Lyons, without any difference either in their name or in their value.

Three weights are uſed at Lyons.

The *poids de marc*, for weighing precious metals;

The *poids de ſoie*, for weighing ſilks;

The *poids de ville*, for weighing every other deſcription of goods.

The pound poids de marc is 16 ounces, 15 of which compoſe the pound poids de ſoie, and 14 the pound poids de ville.

An aſnée of corn is 6 bichets; and the bichet, the capacity of which is 1 cubic foot, or *pied de roi,* is divided into 4 coupes, or 16 picotins.

An aſnée of wine is 88 pots; and the pot, which is equal to the pinte of Paris, is divided into 2 chopines, or 4 demi ſeptiers.

The ell of Lyons is ſomewhat ſhorter than the Paris ell of 524 lines.

99 ells of Paris make 100 ells of Lyons.

MADRAS.

Accounts are kept in pagodas, each pagoda conſiſting of 36 fanams.

The pagoda is $3\frac{3}{5}$ rupees, and the rupee 10 fanams.

The gold pagoda, called ſtar pagoda, is of the purity of 81 touch, and weighs $52\frac{3}{4}$ grains troy-weight.

The pagoda ſerves both as a coin and as a weight.

Gold, wrought or unwrought, is ſold by the pagoda.

The ſeyra of Malabar weighs $81\frac{1}{4}$ pagodas, or 24 rupees.

The candy, which is equivalent to 500 pounds avoirdupois, conſiſts of 20 maunds, 60 vis, 2400 pollams, or 48000 pagodas.

The maund, which correſponds with 25 pounds avoir du poids, is 3 vis, the vis 40 pollams, and the pollam 20 pagodas.

The garce, grain and dry meaſure, which contains 300,000 Engliſh cubic inches, is 80 parrahs, or 400 marcals.

The marcal, the capacity of which is 750 cubic inches, contains 8 meaſures, and the meaſure, or puddy, 8 ollocks.

When grain is ſold by weight, 9256½ pounds are allowed to a garce.

The puddy, by which milk, ghee, oil, and ſome other liquids, are ſold, is equal to the puddy in grain meaſure.

The Engliſh meaſures are uſed for wine and ſpirits.

A ground, or mauny, land meaſure, is 60 feet long, and 40 feet broad.

The cawny is 24 maunies, and contains 57600 ſquare feet.

121 Engliſh acres are 160 Indian cawnies.

MADRID.

Accounts are kept at Madrid, and in Caſtille, in reales de vellon, each real conſiſting of 34 maravedis de vellon. They are kept, however, in the Royal Treaſury in eſcudos de vellon, each eſcudo conſiſting of 10 reales de vellon, and each real of 34 maravedis de vellon.

The effective eſcudo de oro is 40 reals of vellon.

The eſcudo de plata, or dollar of exchange, is 15 reals 2 maravedis of vellon.

The other coins, as well as the weights and meaſures of Caſtille, are the ſame as thoſe which are deſcribed under the head of Spain.

MAJORCA.

Accounts are kept in this iſland in *peſos*, or dollars, each peſo conſiſting of 8 reals, and each real of 34 maravedis; or otherwiſe in libras, each libra conſiſting of 20 ſueldos, and each ſueldo of 12 dineros.

There is no difference between the peſo and the libra, which are both equal to the dollar of exchange.

The quintal, or cantaro Barbareſco, or of Barbary, for weighing almoſt every deſcription of goods, conſiſts of 100 rotolos.

The quintal, or cantaro of Majorca, is 104 rotolos.

The carga is 3 quintals of Majorca, or 312 rotolos.

100 rotolos of Majorca make 91$\frac{1}{3}$ pounds of Caſtille.

Corn is meaſured by the quartera.

5 fanegas of Caſtille make 4 quarteras of Majorca.

A cortan, or quartan of oil, weighs 9 rotolos; and 12 quartancs compoſe 1 odor of 108 rotolos.

The canna is 1$\frac{7}{8}$ yard of England, and

100 varas of Caſtille make 48$\frac{4}{5}$ cannas of Majorca.

MALACCA.

In this city of the Eaſt Indies, accounts are kept in rixdollars, each conſiſting of 8 ſchillings, and the ſchilling of 8 ſtuyvers, or 24 duyten.

The ducatoon of Holland is worth	13 ſchillings
The hard dollar	10 ditto
The rupee of Bombay	5 ditto.

In reſpect to weights and meaſures, ſee Batavia.

MALAGA.

In this city of the titular kingdom of Granada, in Spain, accounts are kept in reales de vellon of 34 maravedis de vellon each.

The real of vellon is 8$\frac{1}{2}$ quartos, 17 ochavos, 34 maravedis, 68 blancas, 136 cornados, or 340 dineros.

The real de plata doble is equal to the real of old plate.

The ducado del Rey is the ſame as the ducat of exchange.

The other coins are deſcribed under the head of Spain.

The weights of Caſtille are uſed at Malaga.

The fanega of Malaga is 10 per cent more capacious than that of Caſtille; wherefore

10 fanegas of Malaga make 11 fanegas of Caſtille.

The arroba, or cantara, for meaſuring liquids, is compoſed of 8 azumbres, or 32 quartillos, equal to thoſe of Caſtille.

The pipe of wine of Malaga contains 35 cantaras, but is reckoned only for 34.

The bota of wine of *Pedro Ximenez* contains 53½ cantaras.

The bota of oil correſponds with 43 arrobas of Caſtille.

The carga of raiſins weighs 7 arrobas.

The vara of Malaga is the ſame as that of Caſtille.

MALTA.

Accounts are kept in this iſland in *ſcudi*, or current crowns, the ſcudo conſiſting of 12 tari, 24 carlini, 240 grani, or 1440 piccioli.

Theſe monies have two values, the one denominated of ſilver, and the other of copper, or current: the former is to the latter in the proportion of 3 to 2.

The coins of Malta are as follow:

Of gold: the double louis of the purity of $20\frac{1}{2}$ carats, weighing $\frac{23}{26}$ of an oncia, and worth $13\frac{1}{3}$ ſilver ſcudi, or 20 current ſcudi; the louis and the half louis, in the ſame proportion.

Of ſilver: the oncia of the purity of 10 carats, weighing $1\frac{1}{8}$ oncia, and worth $1\frac{2}{3}$ ſilver ſcudo, or $2\frac{1}{2}$ current ſcudi; the current ſcudo of $\frac{2}{3}$ of a ſilver ſcudo, or 12 tari.

The pound, for weighing precious metals, is divided into 12 oncie, the oncia into 32 trapeſi, and the trapeſo into 18 grani; wherefore the pound is 6912 grani.

In the aſſaying of gold, the degrees of fineneſs are expreſſed by 24 carats; and in the aſſaying of ſilver, by 12 carats.

The cantaro conſiſts of 100 rotoli.

A ſalma of corn contains $3\frac{3}{4}$ ſacchi of Leghorn.

MANTUA.

In this city of Lombardy, accounts are kept in lire, each lira conſiſting of 20 ſoldi, and each ſoldo of 12 denari.

The ſcudo is 6 lire, or 120 ſoldi.

The pound is equivalent to 5083 grains troy-weight.

A ſtaro of wheat weighs about 80 pounds of Mantua.

A moggio of oil weighs 320 pounds ditto.

Cloth is meaſured by the braccio.

MARSEILLES.

In this city of France, accounts are kept in francs and cents.

The coins of France are current at Marſeilles without any diſtinction.

The *ecu*, or crown of 64 ſols, by which, according to Kruſe, the price of gall nuts and of cotton was regulated, is no longer in uſe.

The pound *poids de table* is lighter than the pound *poids de marc*, and is divided into 16 ounces poids de table.

100 pounds poids de marc make 121⅞ pounds poids de table.

A charge of corn is compoſed of 4 émines, and the émine of 8 ſivadiers.

A millerolle of wine conſiſts of 4 ſcandaux, and the ſcandal of 15 pots.

A millerolle of oil weighs 144 pounds poids de table, and is divided into 4 ſcandaux; the ſcandal into 12 livres, each of which is reckoned as 3 pounds weight.

The canne, cloth meaſure, is 8 pans, and the pan 4 quarts.

MARTINIQUE.

Accounts are kept in this, as well as in the other Weſt India iſlands under the dominion of France, in livres, each livre conſiſting of 20 ſols, and each ſol of 12 deniers currency.

The livre of theſe iſlands is ⅓ per cent leſs than the livre tournois of France; wherefore

4 livres currency make 3 livres tournois.

The weights and meaſures are the ſame as thoſe of France.

MEXICO.

In this city, the capital of New Spain, in Peru, in Chili, and in all the other dominions of Spain in North and South America, accounts are kept in *peſos*, or dollars, each peſo conſiſting of 8 reales, and each real of 34 maravedis de plata Mexicanos.

The coins of Spaniſh America are as follow:

Of gold: the new doblon de à ocho of 16 peſos; the ½, ¼, and ⅛ doblon, in the ſame proportion.

Of ſilver: the peſo of 8 Mexican reals of plate; the ½, ¼, and ⅛ peſo, in the ſame proportion.

In the aſſaying of gold, the caſtellano is divided into 24 quilates, the quilate into 4 granos, and the grano into 8 parts.

In the aſſaying of ſilver, the marc is divided into 12 dineros, the dinero into 24 granos, and the grano is reckoned 8¼ maravedis; whence the marc conſiſts of 288 grains, or 2376 maravedis.

A marc of ſilver of the purity of 10¾ dineros is worth 8 peſos, more or leſs.

A marc of fine ſilver is worth 73 reals of plate, more or leſs.

The greateſt part of the ſilver drawn from the mines of New Spain is conveyed to Mexico, and is eſtimated at about 2 millions of marcs per annum. The duties levied for the King of Spain, incluſive of the proceſs of coinage, amount to 12¼ per cent.

The mines of the ſame country furniſh but an inconſiderable quantity of gold, part of which is uſed for ornaments. At the mint of Mexico, which is the only one in New Spain, the annual coinage of dollars amounts to 12 millions in number; the coinage of doubloons, within the ſame term, is of the value of 1 million of dollars.

The regulation of ſuch coinage, and the weights and meaſures uſed in Spaniſh America, are referred to under the head of Spain.

MILAN.

In this city, and in all Lombardy, accounts are kept in lire, each lira conſiſting of 20 ſoldi, and each ſoldo of 12 denari currency.

The ſcudo Imperiale, or di cambio, is worth 5 lire 17 ſoldi, or 117 ſoldi, and the ſoldo 12 denari Imperiali.

The current ſcudo is worth 5 lire 15 ſoldi, or 115 ſoldi, and the ſoldo 12 denari currency.

Imperial money is to current money as 106 to 150: in fact, the *Filippo,* or *Philip,* whoſe value, previouſly to 1750, was only 106 ſoldi Imperiali, is at preſent worth 150 ſoldi currency.

106 lire Imperiali make 150 lire currency
212 ſcudi ditto . . . . . . 1775 lire ditto
1219 ſcudi ditto . . . . . . 1775 ſcudi ditto
1219 ſoldi ditto . . . . . . 15 ſcudi ditto
212 ſoldi ditto . . . . . . 15 lire ditto.

The coins of Milan are as follow:

Of gold: the doppia, weighing 130 grani, of 25 lire 5 ſoldi current.

Of ſilver: the ducatone, weighing 26 denari, of 8 lire 12 ſoldi current; the Filippo, weighing 22¾ denari, of 7 lire 10 ſoldi current.

Of ſilver and copper: the lira of 20 ſoldi; the parbajollo of 2½ ſoldi; pieces of 1 ſoldo.

The marc, for weighing precious metals, is compoſed of 8 oncie, the oncia of 24 denari, and the denaro of 24 grani.

In the aſſaying of gold, the oncia is divided into 24 carati, the carato into 24 parts; and in the aſſaying of ſilver, into 12 denari, the denaro into 24 grani.

Two weights are uſed at Milan:

The pound peſo groſſo conſiſts of 28 ounces, and the pound peſo ſottile of 12 ounces.

3 pounds peſo groſſo make 7 pounds peſo ſottile.

A mina of corn is compoſed of 4 rubbi, 28 moggi, or ſacci, 224 ſtari, or 448 ſtarelli.

A carga of oats is 9 ſtari, or 18 ſtarelli.

The brenta, liquid meaſure, conſiſts of 3 ſtari, 6 mini, 12 quartiri, 48 pinti, or 384 boccali.

A boccalo of wine weighs 1 pound peſo groſſo.

A rubbo of oil weighs 25 pounds of 12 ounces each.

Two bracci are uſed at Milan for meaſuring cloth and ſilk ſtuffs.

MINORCA.

Accounts are kept in this iſland in libras, or peſos, each conſiſting of 20 ſueldos, and each ſueldo of 12 dineros.

The libra, or peſo, is worth 128 quartos.

The cantaro is 4 arrobas, 34⅔ libras mayores, 104 libras menores, and correſponds with 90⅕ libras, or pounds of Caſtille.

The libra mayor is 36 onzas, and the libra menor 12.

The botta menor is 4 cargas, 16 barriles, or 88 quartillos.

1 quartillo of Minorca is 1⅘ quartillos of Caſtille.

MOCHA.

In this city of Arabia Felix, accounts are kept in piaſtres of 80 cavears, or carats.

The coins of Mocha are only the commaſſee of 7 carats, and the carat.

The harraff, by which cotton is ſold, is worth 1 piaſtre 22 cavears.

18 harraffs make 23 piaſtres.

A Venetian ſequin is worth 2 piaſtres 25 cavears.

100 Spaniſh dollars are equivalent to $121\frac{1}{2}$ piaſtres of Mocha.

The beak, for weighing precious metals, is 1 oz 10 dwts $13\frac{2}{3}$ grains troy-weight. It conſiſts of $1\frac{1}{2}$ vakia, 10 maſcals, 15 caffalas, or 240 carats.

The maſcal weighs 3 dwts $1\frac{1}{3}$ grain troy-weight, and is $1\frac{1}{2}$ caffala, or 24 carats.

100 Spaniſh dollars weigh 87 vakias.

The bahaar, or Mocha cuſtom-houſe weight, is 15 frazils, 150 maunds, or 6000 vakias; and the maund, which is equivalent to 3 pounds avoirdupois, is 2_{3} rattles, or 40 vakias.

1 Mocha bahaar is equal to $16\frac{1}{2}$ Bombay maunds, 18 Madras maunds, 12 maunds $15\frac{1}{8}$ ſeers of Surat, or 6 maunds $1\frac{1}{15}$ ſeer Bengal factory.

7 Mocha frazils make 10 Beetlefakee frazils.

The tommand conſiſts of 40 kellas, and weighs 168 pounds avoirdupois in rice.

The gudda, which correſponds to about 2 Engliſh gallons, conſiſts of 8 nuſieahs, or 128 vakias.

The long iron covid is 27 inches, the covid 18, and the guz 25.

MODENA.

In this Dutchy of Italy, accounts are kept in lire, each lira conſiſting of 20 ſoldi, and each ſoldo of 12 denari.

The coins of Modena are as follow:

Of ſilver: the Filippo of 15½ lire; the ſcudo of 3¾ lire.

Of ſilver and copper: the lira of 20 ſoldi, or bolognini; the capelono of 5 ſoldi; the capelino of 2½ ſoldi; and the ſoldo of 12 denari.

The quintal conſiſts of 100 pounds.

Corn is meaſured by the ſtaro, or ſtajo, and cloth by the braccio.

MONTPELLIER.

In this city, and at the ſeaport of Cette, both in the department of Herault in France, accounts are kept in francs and cents.

The other coins may be referred to under the head of France.

The quintal conſiſts of 100 pounds, and is equivalent to 81 pounds 9 ounces 18 grains poids de marc.

A ſetier of corn is 2 émines, or 4 quarts.

A muid of wine is 18 ſetiers, 24 barils, or 576 pots.

A charge of oil contains 4 barals, 8 émines, 16 quarts, or 128 pots.

The canne conſiſts of 9 palmes, and is 74 inches of France.

MOROCCO.

In this empire of Africa, at Tafilet, Fez, Sallee, Una, and in the other parts of weſtern Barbary, accounts are kept in xerifes, which are divided into 8 parts; or otherwiſe, in ducados, conſiſting of 48 blanquillos, each blanquillo of 20 fluces.

The ducado is a gold coin worth about 8 ſhillings 9 pence;

The blanquillo is therefore worth $2\frac{3}{16}$ pence.

The pound of Caſtille is generally uſed at Morocco for weighing goods.

The almude, or wheat meaſure of Sallee, is 40 celemines of Caſtille.

The cahiz, the fanega, and the other Spaniſh meaſures, are uſed at Morocco.

Cloths are meaſured by the cana of 12 covados of Morocco.

100 canas of Morocco make $76\frac{3}{10}$ picos Moriſcos of Una.

MUNICH.

Accounts are kept at Munich, and in all the Electorate of Bavaria, in guldens, each gulden conſiſting of 60 kreitzers, and the kreitzer of 4 hellers currency.

The thaler is $1\frac{1}{2}$ gulden, $22\frac{1}{2}$ batzen, 30 keiſer groſchen, 36 land muntze, 45 albus, 90 kreitzers, or 360 hellers.

There is another money in Bavaria known by the denomination of ſchwartze-muntze, or black-money, of which I ſhall ſpeak under the head of Ratiſbon.

The coins of Bavaria are as follow:

Of gold:	the carl of	10 guldens	42 kreitzers
	the max	7	8
	the ducat	4	48
	the gold gulden	3	9

Of ſilver:	the old reichſthaler	2 guldens	24 kreitzers
	the old gulden	1	12
	the new reichſthaler	2	0
	the new gulden	1	0

Of ſilver and copper: pieces of 30, 24, and 15 kreitzers.

The marc, for weighing precious metals, is the ſame as that of Cologne.

The centner conſiſts of 100 pounds.

Cloth is meaſured by the elle, or ell.

MUNSTER.

Accounts are kept at Munſter, and in almoſt every part of the Circle of Weſtphalia, in thalers, each conſiſting of 28 ſchillings, and each ſchilling of 12 pfenings.

The thaler is $1\frac{1}{2}$ gulden, 8 blamuſers, 28 ſchillings, 36 marien groſchen, 336 pfenings, or 672 hellers.

The gulden is $5\frac{1}{3}$ blamuſers, $18\frac{2}{3}$ ſchillings, 24 marien groſchen, 224 pfenings, 448 hellers.

The coins of Weſtphalia are as follow:

Of ſilver: the gulden of 24 marien groſchen; the marc of 12 ditto.

Of ſilver and copper: pieces of $\frac{1}{12}$ and $\frac{1}{24}$ of a thaler; of 1 and $\frac{1}{2}$ ſchilling.

Of copper: pieces of 1, 2, 3, and 4 pfenings.

The weights and meaſures are deſcribed under the head of Oſnaburg.

NANTES.

In this city of France, accounts are kept in francs and cents.

The pound poids de marc is uſed at Nantes.

Cotton, hemp, oil, ſugar, wool, and ſome other articles, are ſold by the weight of 50 kilogrammes, correſponding with 102 pounds 2 ounces 29 grains poids de marc.

Coffee, indigo, pepper, and ſome other articles, are ſold by the weight of 5 hectogrammes, correſponding with 1 pound 3 gros poids de marc.

A tonneau of corn is compoſed of 10 ſetiers, or 160 boiſſeaux, and correſponds with 250 decalitres 160 decilitres.

A muid of ſalt is 52 quartants.

A tonneau of wine contains 2 pipes, the pipe 2 barriques, and the barrique 120 pots. The tonneau correſponds with 9 hectolitres 28 litres.

Brandy is ſold per velt of 3 pots each, and the velt correſponding with 7 litres 6 decilitres.

Two ells are uſed at Nantes:

The Nantes ell of 50 inches of France.

The French ell of 44 ditto.

NAPLES.

Accounts are kept throughout the continental part of the kingdom of the Two Sicilies in ducati di regno, each ducato conſiſting of 100 grani.

The ducato di regno is equivalent to 5 tarini, 10 carlini, 40 cinquini, 100 grani, 200 torneſi, 300 quartini, 600 piccioli, or 1200 cavalli.

The coins of Naples are as follow:

Of gold: the doppia of 16 carlini; the double onza of 60 carlini; and the onza of 30.

Of ſilver: the dúcato di regno of 10 carlini, and the half ducato of 5; the ſcudo of Sicily of 12 carlini, and the half ſcudo of 6; the taro, or tarino, of 2 carlini; pieces of 26, 24, 20, and 13 grani.

The pound, for weighing precious metals, and ſome valuable articles, is divided into 12 ounces; the ounce, or *onzia*, into 30 trapeſi; and the trapeſo into 20 acine. It correſponds, according to Mr. Tillet, with 6039 grains of France, and is, therefore, equivalent to 4954½ grains troy-weight.

The rotolo, for weighing cocoa, coffee, cotton, ſugar, and other articles, is divided into ½, ⅓, ¼, ⅙, and ⅛ parts, having not any ſpecific denomination, and weighs 33⅓ onzie; whence 9 rotoli make 25 pounds.

The cantaro groſſo is compoſed of 100 rotoli.

The cantaro piccolo, or quintal, conſiſts of 100 pounds.

9 cantari groſſi make 25 cantari piccoli.

The carro of corn is 36 tomoli, and a tomolo of wheat weighs from 45 to 48 rotoli.

A pipe of wine, or of brandy, is 12 barrels, and correſponds with 132 Engliſh gallons.

A ſalma of oil conſiſts of 16 ſtara, or 320 pignatti: it weighs 165⅓ rotoli, and correſponds with 236 gallons of London.

Cloth is meaſured by the canna of 8 palmi.

NARVA.

Accounts are kept either in roubles of 100 copecs each, or in reichſthalers, conſiſting of 80 copecs, or 64 wittens.

4 roubles make 5 reichſthalers.

All the coins of Ruſſia are current at Narva.

The ſchifpfund conſiſts of 10 poods, 20 liſpfunds, or 400 pounds.

7 ſchifpfunds of Narva make 8 berckowitz of Ruſſia.

A laſt of corn meaſures 24 tonnes, 96 viertels, or 768 kapps.

The ahm, liquid meaſure, is 4 ankers, or 120 ſtoſs.

NAVARRE.

In Spaniſh Navarre, accounts are kept either in reales of 36 maravedis each, or in ducados and libras; each of which conſiſts of 20 ſueldos, or 240 dineros.

The ducado is $6\frac{8}{15}$ libras, $10\frac{8}{9}$ reales, 49 tarxas, $65\frac{1}{8}$ grueſos, 196 ochavos, 392 maravedis, or 784 cornados.

The libra is $1\frac{2}{3}$ real, $7\frac{1}{2}$ tarxas, 10 grueſos, 30 ochavos, 60 maravedis, or 120 cornados.

The real is $4\frac{1}{2}$ tarxas, 6 grueſos, 18 ochavos, 36 maravedis, or 72 cornados.

The doblon de plata of 32 reales is of that value both in currency and under the denomination of a piſtole of exchange, a real of Navarre being equal to a real of plate: there are, in the ſame coin, 144 tarxas, 192 grueſos, or 1152 maravedis.

49 piſtoles of exchange make	144 ducats of Navarre
49 dollars ditto	36 ditto
833 ducats ditto	846 ditto
5 piſtoles ditto	96 libras of Navarre
5 dollars ditto	24 ditto
85 ducats ditto	564 ditto.

The marc of Navarre conſiſts of 8 onzas, 32 quartos, 128 adarmes, 4608 granos, and is heavier than that of Caſtille.

16 marcs of Navarre make 17 marcs of Caſtille.

The pound and meaſures of Caſtille are uſed, however, in Navarre.

NICE.

In this city, now chief of the department of the Maritime Alps, in France, accounts are kept either in lire, each lira conſiſting of 20 ſoldi, and each ſoldo of 12 denari, or in francs and cents.

A ſacco of corn contains 3 ſtaji, and the ſtajo 16 menſinali.

A rubbo of oil weighs 25 pounds of Nice.

Cloths are meaſured by the palmo and the raſo.

NUREMBERG.

In this city of the Circle of Franconia, in Germany, accounts are kept in guldens, each conſiſting of 60 kreitzers, and each kreitzer of 4 pfenings.

The gulden is alſo divided into 20 kayſer groſchen of 12 pfenings each.

The reichſthaler de eſpecie is $1\frac{1}{3}$ current thaler, 2 guldens, 6 kopfſtucken, 30 batzen, 40 kayſer groſchen, 120 kreitzers, or 480 pfenings.

The current thaler is $1\frac{1}{2}$ gulden, 30 kayſer groſchen, or 90 kreitzers.

3 effective reichſthalers make 4 current thalers
2 current thalers . . . . 3 current guldens.

Theſe monies have three values, diſtinguiſhed by the appellation of current money, gold money, and white money.

Current money conſiſts of the coins which are received by the Bank of Nuremberg according to their actual price, namely, the carolin of 9 guldens, the louis d'or, formerly coined in France, the Spaniſh doubloon, the effective reichſthalers. The current money of Nuremberg is, however, no other than the convention-money, of which I have ſpoken under the head of Leipſic, ſince the effective reichſthaler is worth 2 current guldens.

Gold money conſiſts of the carolin of 9 guldens, which is, however, reckoned for 10 guldens, more or leſs.

White money is that which is ſtruck in the city of Nuremberg: it conſiſts of pieces of ſilver and copper, and is 20 per cent leſs in value than current money.

The coins of Nuremberg are as follow:

Of gold: the ducat of 4 guldens 10 kreitzers currency, or 5 guldens white money; the gold-gulden of 3 guldens 4 kreitzers currency, or 3 guldens 40 kreitzers white money.

Of ſilver: the old reichſthaler of 2 guldens 13⅓ kreitzers currency, or 2 guldens 40 kreitzers white money; the new reichſthaler of 2 guldens currency, or 2 guldens 24 kreitzers white money.

Of ſilver and copper: pieces of 15, 12, 7½, 6, 5, 4, 3, 2½, 2, and 1 kreitzer, white money.

The marc, for weighing precious metals, conſiſts of 8 ounces, 16 loths, 64 quintilins, or 256 pfenings.

In the aſſaying of gold, the marc is divided into 24 carats, the carat into 12 grains; and in the aſſaying of ſilver, into 16 loths, the loth into 4 quintilins, or 16 pfenings.

The ſchifpfund, commercial weight, conſiſts of 3 centners, or 300 pounds.

A ſummer of wheat and rye is compoſed of 2 malters, 16 metzen, or 64 diethauſen.

A ſummer of barley and oats is 4 malters, or 32 metzen.

The fuder, liquid meaſure, contains 12 eimers, 384 viertels, 768 maas, or 1536 ſeidel, tavern meaſure; the exciſe meaſure is, however, greater, in the proportion of 16 to 17.

The ruthe, land meaſure, is reckoned ſometimes for 16 feet, and ſometimes for 12.

Cloth is meaſured by the ell, and the foot is 12 inches.

The courſe of exchange is as follows:

London receives 9¼ current guldens, more or leſs, per pound ſterling.

Amſterdam receives 142 current rixdollars, more or leſs, for 100 rixdollars banco.

France receives 76 current rixdollars, more or leſs, for 300 livres tournois.

Hamburgh receives 148 current rixdollars, more or leſs, for 100 rixdollars banco.

OSNABURG.

In this city of Weſtphalia, accounts are kept either in thalers, each conſiſting of 21 ſchillings, and each ſchilling of 12 pfenings; or in thalers of 36 marien groſchen, each marien groſchen of 7 pfenings.

The thaler is 1½ gulden, 21 ſchillings, 36 marien groſchen, 72 mathiers, 252 pfenings, or 504 hellers.

The gulden is 14 ſchillings, 24 marien groſchen, or 168 pfenings.

The coins of Oſnaburg are as follow:

Of ſilver: the reichſthaler of 1⅓ thaler, or 2 guldens; the gulden and half gulden, of 24 and 12 marien groſchen.

Of ſilver and copper: pieces of 6, 4, 3, 2, 1½, and 1 marien groſchen; the gœſgen of 5¼ pfenings.

Of copper: pieces of 5, 4, 3½, and 1 pfening.

The marc, for weighing precious metals, is the ſame as that of Cologne.

The pfund-ſchwer is compoſed of 300 pounds, and the centner of 100.

The pound is divided into 16 ounces, 32 loths, 128 quintins, or 512 pfenings.

A laſt of corn conſiſts of 100 ſcheffels, 400 viertels, or 1600 bechers.

The fuder contains 6 malters, 72 ſcheffels, 288 viertels, or 1152 bechers.

The fuder, liquid meaſure, conſiſts of 6 ahms, 168 viertels, 672 kannes, 2688 orts, or 10752 ſtelfgens.

A barrel of beer contains 27 viertels, or 108 kannes.

OVIEDO.

Accounts are kept at Oviedo, at Gijon, and in all the Principality of Aſturias, in reales de vellon, each real conſiſting of 34 maravedis.

All the coins of Spain are current in Aſturias, without any difference either in their denomination or in their value.

The quintal is compoſed of 4 arrobas, or 100 pounds of Caſtille, of 16 ounces each.

The pound of Aſturias conſiſts of 24 ounces; and as each ounce is equal to an ounce of Caſtille, 100 pounds of Aſturias make 150 pounds of Caſtille.

The fanega Aſturiana is compoſed of 12 celemines, or 48 quartillos, and is $\frac{1}{3}$ per cent greater than that of Caſtille; whence

3 fanegas of Aſturias make 4 fanegas of Caſtille.

The cantara of wine is divided in the ſame manner as that of Caſtille, but is 16$\frac{2}{3}$ per cent more capacious.

6 quartillos of Aſturias make 7 quartillos of Caſtille.

The vara of Aſturias is divided in 3 thirds, 4 quarters, or 36 inches.

100 varas of Caſtille make 97 varas of Aſturias.

PARIS.

Accounts are kept in francs, each franc conſiſting of 100 centimes.

For the coins current at Paris, ſee France.

The pound poids de marc is compoſed of 2 marcs, 16 ounces, 128 gros, 384 deniers, or 9216 grains.

The muid, corn meaſure, is divided into 12 ſetiers, and the ſetier into 2 mines, 4 minots, 12 boiſſeaux, or 192 litrons.

A ſetier of oats conſiſts of 24 boiſſeaux, 96 picotins, or 384 litrons.

The boiſſeau meaſures 16 litrons, and is 640 cubic inches of France.

A ſack of flour weighs 325 lbs poids de marc.

A muid of ſalt is 12 ſetiers, 48 minots, 192 boiſſeaux, 3072 litrons, or 49152 meſurettes. It weighs about 4800 pounds, and meaſures 123774 cubic inches of France.

A muid of charcoal is compoſed of 20 mines, or 320 boiſſeaux.

A voie of pit-coal is 15 minots, 30 demi minots, 90 boiſſeaux, or 360 quartes.

A muid of wine is 36 ſetiers, or 288 pintes; and the ſetier is divided into 4 quarts, 8 pintes, 16 chopines, 32 demi-ſetiers, 64 poinçons, or 256 roquilles.

The velte contains 6 pintes, and the pinte is 48 cubic inches.

A muid of wine is alſo compoſed of 2 feuilletes, 3 tierçons, or 4 quartaux.

Brandy is ſold by the poinçon of 27 ſetiers.

There are three ells at Paris:

The ell of 44 inches, or 528 lines.

The ell of 43 inches $10\frac{5}{6}$ lines, or $526\frac{5}{6}$ lines.

The ell of 43 inches 8 lines, or 524 lines.

The relation between the cloth meaſure of France and thoſe of foreign countries was regulated by the ell of 524 lines.

The *toiſe*, or fathom, is 6 feet, 72 inches, or 864 lines.

The foot, called *pied de Roi*, is 12 inches, or 144 lines; and the *pouce*, or inch, is 12 *lignes*, or lines.

The arpent of Paris, land meaſure, is 100 ſquare perches, 900 ſquare fathoms, or 32400 ſquare feet. The perche of Paris is 18 feet, or 324 ſquare feet.

The *lieue*, or league of Paris, is 2000 fathoms, or 12000 feet French.

PARMA.

In this Dutchy of Italy, accounts are kept in lire, each lira conſiſting of 20 ſoldi, and each ſoldo of 12 denari.

The ſcudo, money of account, is 7 lire 6 ſoldi.

The coins of Parma are as follow:

Of gold: the doppia of 72 lire 12 ſoldi.

Of ſilver: the ducatono of 24 lire; the ſcudo of 8 lire 8 ſoldi; the teſtono of 6 lire 6 ſoldi.

Of ſilver and copper: pieces of 20, 10, and 5 ſoldi.

The pound, which is 5 per cent heavier than the pound peſo ſottile of Genoa, is divided into 12 ounces, the ounce into 24 denari, and the denaro into 24 grani.

A ſtaro of wheat is divided into 16 quartarole, and weighs about 102 pounds of Parma.

The brenta, liquid meaſure, is divided into 36 pinti.

There are three meaſures uſed at Parma for cloths, ſtuffs, and linens.

The *braccio di legno,* for meaſuring cloths; the *braccio di ſeta,* for ſilk ſtuffs; and the *braccio di filo,* for linens.

PATRAS.

Accounts are kept at Patras, and in all the Morea, in piaſtres of 80 aſpers.

For the other monies, ſee Turkey.

The quintal of Patras is compoſed of 44 okes, 132 pounds, 1580 ounces, or 17600 drachms.

A ſack of currants weighs about 140 pounds of Patras.

A ſtaro of corn conſiſts of 3 bachels.

The pik, cloth and linen meaſure, is 8 per cent longer than the pik for meaſuring ſilk ſtuffs.

PEGU.

In this kingdom of Aſia, accounts are generally kept in ſilver ticals of 16 touch each, the value of which is about 33⅔ pence ſterling.

The only coin is called *ganza;* it is of copper and pewter, and worth about 1$\frac{1}{20}$ penny.

In the aſſaying of gold and ſilver, the tical, or unit of reference, is divided into 16 parts, or touch.

The candy conſiſts of 150 vis, and the vis is divided into 4 argitos, 8 abuccos, or 100 ticals. It correſponds with 6 maunds 28 ſeers Bengal factory, or 500 pounds avoirdupois.

A baſket of rice weighs 16 vis, and 40 baſkets make 1 ton of rice.

PERNAU.

In this city of the government of Riga, in Ruſſia, accounts are kept in ſilver rubles, each ruble conſiſting of 100 copecs.

The coins of Ruſſia are current at Pernau, and the bank aſſignations are received at a fluctuating agio from 30 to 50 per cent below their numeral value.

The ſchifpfund is 20 liſpfunds, or 400 pounds.

The centner is 100 pounds, and the pound is divided into 16 ounces, 32 loths, or 128 quintins.

A laſt of wheat is 24 tonnes, 48 loofs, or 192 kullmitz.

The laſt for ſalt contains 18 tonnes, or 324 kullmitz; and the laſt for linſeed, 12 tonnes, or 24 loofs.

The ahm, liquid meaſure, is 4 ankers, or 120 ſtofs.

Cloth is meaſured by the ell, and 13 ells of Pernau make 10 archines of Ruſſia.

PERSIA.

In this empire of Aſia, accounts are kept in tomans, each toman conſiſting of 1000 dinars-biſti, each of which is 12 dinars.

The toman is divided into 50 abaſis, 100 mamudis, 20 zacjiers, 1000 dinars-biſti, 2000 kabeſquis, or 10000 dinars.

The coins of Perſia are as follow:

Of gold: the cherafi, or tola, of 8 ſilver larins. The cherafi is ſtruck only upon the acceſſion of a Prince to the throne of Perſia, and is therefore to be conſidered rather as a medal than as a coin.

Of ſilver: the haſaer-denaric of 10 mamudis; the daezajie of 5 ditto; the larin, or paenzajie, of 2½ ditto.

Of ſilver and copper: the abbajer, or abaſi, of 2 mamudis; the chodabende, or mamudi; the zacjier of ½ mamudi.

Of copper: the kabeſqui of 5 dinars.

Silver monies are generally reckoned by bags of 50 tomans, or 2500 abaſis.

100 mamudis of Aveſa, or Aviſa, in Chuſiſtan, weigh 71¾ miſcales, which correſpond with 5149 grains troy-weight. And as the mamudi contains 2 parts of ſilver and 3 parts of copper, 100 mamudis, or 1 toman, correſpond with 2059½ grains of fine ſilver.

The man, or batman, weight of Tauris, is 6 rateles, 300 derhemes, 600 miſcales, or mitigales.

The batman, weight of Chahy, or Cheray, is double that of Tauris.

An artaba of corn contains 25 capichas, or heminas, 50 chenicas, or 200 ſextarios.

The legana is 30 chenicas, or 120 ſextarios; the collothum is 25 ſextarios, and the ſabbitha 22.

Three meaſures are uſed in Perſia for cloths, ſtuffs, and linens; the gueze, the gueze monkelſe, and the ariſh.

22,23 paraſangas, or leagues of Perſia, make 1 degree.

POLAND.

In the States of Poland, accounts are kept in zloti, or florins, each florin conſiſting of 30 groſz, and each groſz of 12 pfenings.

The currency of Little Poland is of double the value of the currency of Great Poland.

The coins of Poland are as follow:

	Lit.Poland.		Gr.Poland.	
	Florins.	Groſz.	Florins.	Groſz.
Of gold: the ducat of	9	0	18	0
Of ſilver: the reichſthaler	4	0	8	0
Of ſilver and copper: the tympfe	0	18	1	6
the ſzoſtack	0	6	0	12
the trojack	0	3	0	6
the polturack	0	1½	0	3
Of copper: the groſz	0	1	0	2
the ſzlong	0	0¼	0	0½

The ducats and reichſthalers were ſtruck in Poland ſince the year 1766, *ad legem imperii;* wherefore 1 marc of gold, Cologne weight, of the purity of 23 carats 8 grains, was coined into 67 ducats; and 1 marc of ſilver, of the ſame weight, and of the purity of 14 loths 4 grains, was coined into 8 reichſthalers.

The marc of Warſaw, for weighing precious metals, correſponds with 3114 grains troy-weight; that of

Cracow with 3069 grains; and that of Wilna, in Lithuania, with 3006 grains.

The pound of Warſaw correſponds with 5853 grains troy-weight, and that of Cracow with 6271 grains.

14 pounds of Cracow make 15 pounds of Warſaw: each pound is divided into 48 ſkoyciec.

The korzec, liquid meaſure, contains 16 kruſkas, or jars, at Cracow, and 24 at Warſaw.

PONDICHERRY.

In this city, ſituated on the coaſt of Coromandel, accounts are kept in pagodas of 24 fanams, each fanam of 60 caſh.

The rupee is 16 annas, and the anna 30 caſh; but the rupee is alſo divided by the French into 30 ſols, and the ſol into 12 deniers.

The coins ſtruck by the French are as follow:

Of gold: the pagoda of 24 fanams.

Of ſilver: the rupee of 7 ditto; the fanam worth 68½ caſh, but reckoned only for 60.

A ſeer, Malabar weight, of the purity of 8½ touch, correſponding with 20⅔ carats, is coined into 81¼ pagodas, 71½ of which are equivalent to the marc of France.

A marc of ſilver of the purity of 9⅝ touch, correſponding with 11 ounces 11 pennyweights, is coined into 21⅓ rupees.

In the aſſaying of gold, the tical is divided into 10 *toques*, or touch, and the touch into 128 parts; but in the aſſaying of ſilver, the touch is divided into 100 parts only.

The weights for precious metals are no other than the coins of Pondicherry.

3 rupees weigh 10 pagodas; and the weight of the *ſeyra,* or ſeer, correſponds with that of $24\frac{3}{8}$ rupees, $81\frac{1}{4}$ pagodas, $731\frac{1}{4}$ fanams, or 117000 nellos.

Silver is ſold either by the ſeer, or by the French marc.

100 French marcs make 88 ſeers.

The candil of Pondicherry is compoſed of 20 mons, or 160 bis, and is equivalent to 480 lbs of France.

The bis of Malabar contains 40 paloins, and the paloin correſponds with $644\frac{1}{2}$ grains of France, or $528\frac{3}{4}$ grains troy-weight.

The garza, dry meaſure, conſiſts of 600 mercales.

PORTUGAL.

Accounts are kept in Portugal in reis.

The milreis is $2\frac{1}{12}$ cruzados novos, $2\frac{1}{2}$ cruzados velhos, 10 toſtoens, 25 reales, 50 vintems, or 1000 reis.

The cruzado novo is 480 reis, and the cruzado velho 400.

The toſtaō is 100 reis, the real 40, and the vintem 20.

The coins of Portugal are as follow:

Coinage previous to the year 1722.

	Former value.	Actual value.
The dobraō	of 20000 reis	or 24000 reis
The half dobraō .	of 10000 . . .	or 12000
The doppia moeda	of 4000 . . .	or 4800
The moeda	of 2000 . . .	or 2400
The milreis	of 1000 . . .	or 1200
The cruzado	of 400 . . .	or 480

Coinage ſince the year 1722.

Of gold:	the dobra . . . . of	12800	reis weighing 1 oz.
	the meya dobra of	6400	$\frac{1}{2}$
	the quarter dobra of	3200	$\frac{1}{4}$
	the eſcudo . . . . of	1600	$\frac{1}{8}$
	the meyo eſcudo of	800	$\frac{1}{16}$
	the cruzado velho of	400	$\frac{1}{32}$.

Of ſilver: the cruzado novo of 480 reis; the $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$ cruzado of proportionate value.

Of ſilver and copper: the piece of 6 vintems, or 120 reis; the toſtaõ of 5 vintems; pieces of 60 and 50 reis.

Of copper: pieces of 10, 5, 3, and 1$\frac{1}{2}$ reis. +40 m

The marc, for weighing precious metals, conſiſts of 8 onzas, 64 outavas, 192 eſcrupulos, 4608 graõs, or grains.

In the aſſaying of gold, the marc is divided into 24 quilates, or carats, the carat into 24 grains; and in the aſſaying of ſilver, into 12 dinheiros, or pennyweights; the pennyweight into 24 grains.

There has not been any alteration in the weight, ſtandard, or value of the gold coins of Portugal, ſince the year 1722.

A marc of gold of the purity of 22 carats is coined into 8 dobras, 16 meyas dobras, 32 quarter dobras, 64 eſcudos, 128 meyos eſcudos, or 256 cruzados velhos.

A marc of ſilver of the purity of 10 pennyweights 19 grains is coined into 13$\frac{1}{3}$ cruzados novos, or new cruzades, which is the denomination of thoſe that have been ſtruck ſince the year 1750.

The proportion between gold and ſilver in Portugal is as 1 to 16.

The carat for weighing diamonds is divided into 4 grains.

The weight of the carat of Portugal is very nearly the ſame as that of the Engliſh carat.

The pound, commercial weight, conſiſts of 2 marcs, 16 ounces, or ~~96~~ 128 outavas.

The quintal is compoſed of 4 arrobas, or 128 pounds, and the arroba of 32 pounds.

A moyo of corn conſiſts of 15 fanegas, 60 alqueires, 480 ſelemis, or 960 mequias.

The fanega is 4 alqueires, and the alquier is divided into halves and quarters.

6 alquiers of Liſbon make 5 alquiers of Viana
60 alquiers of Viana . . . 59 alquiers of Porto
8 alquiers of Liſbon . . . 9 alquiers of the Azores.

A tonelada of wine is compoſed of 2 pipas, or botas, 52 almudes, 104 alquieres, or potes, 624 canhadas, or 2496 quartilhos.

The pipa is 26 almudes, and the barril 18.

An almude is 12 canhadas, or 48 quartillos.

The meaſures uſed for liquids at Oporto are 30 per cent more capacious than thoſe at Liſbon; wherefore

100 canhadas of Porto make 130 canhadas of Liſbon.

Two meaſures are uſed in Portugal for cloths, the vara and the covado.

The vara conſiſts of 5 palmos menores, and the covado of 3 palmos craveiros.

The Engliſh yard is ſometimes uſed at Liſbon for meaſuring certain articles imported from Great Britain.

21 varas of Portugal make 34 covados of Liſbon
5 varas of Portugal . . . . 6 yards of England
20 yards of England . . . . 27 covados of Liſbon.

The covado uſed at Oporto is ſomewhat ſhorter than that of Liſbon.

150 covados of Oporto make 147 covados of Liſbon.

The foot of Liſbon is half of the covado.

PRAGUE.

At Prague, and in all Bohemia, accounts are kept in guldens, each conſiſting of 60 kreitzers, and each kreitzer of 4 pfenings.

The reichſthaler de eſpecie is $1\frac{1}{3}$ thaler, 2 guldens, 40 kayſers groſchen, 120 kreitzers, or maley-groſs, 160 groſchels fledermaus, 360 bili-peniz, or 480 pfenings.

The current thaler is $1\frac{1}{2}$ gulden, or 90 kreitzers.

Accounts are alſo kept in *kopy-groſuw-czeſkich,* or ſchocks of groſchen of Bohemia. 1 ſchock is 2 thalers, 3 guldens, 60 groſchen of Bohemia, or 180 kreitzers.

The ſchock, called *kopy-miſſenki,* is compoſed of 30 bili-groſs, 70 kreitzers, or 280 pfenings.

The coins circulating in Bohemia are as follow:

Of gold: the ducat kremnitz of Hungary of 4 guldens 12 kreitzers; the Imperial ducat of 4 guldens 10 kreitzers.

Of ſilver: the reichſthaler of convention of 2 guldens.

Of ſilver and copper: pieces of 20, 17, 10, and 7 kreitzers convention-money.

Of copper: pieces of $\frac{1}{2}$ groſchen, and $\frac{1}{2}$ kreitzer currency of Bohemia.

The centner conſiſts of 120 pounds, and the ſtein of 20.

The pound is divided into 32 loths.

The ſtrick, dry meaſure, contains 4 viertels, 16 maaſſels, or 192 ſeidels.

A faſs of wine meaſures 4 eimers, 128 pints, or 512 ſeidels.

Cloth is meaſured by the ell.

RATISBON.

In this city of Germany, accounts are kept in guldens, each conſiſting of 60 kreitzers, and each kreitzer of 4 pfenings.

The current thaler is 1½ gulden, 22½ batzen, 30 kayſers-groſchen, 36 land-muntzen, 45 albus, 90 kreitzers, 360 pfenings, or 720 hellers.

Theſe monies are denominated *weiſſe-muntze,* or white money, in order to diſtinguiſh them from the monies denominated *ſchwartze-muntze,* or black money, which are as follow:

The *pfund,* or pound, is divided into 41 ſchillings, 164 groſchen, 492 regens purgers, 1230 pfenings, or 2460 hellers black money, and correſponds with $5\frac{6}{7}$ guldens white money.

The pfund pfening is 8 ſchillings, 32 groſchen, 96 regens purgers, 240 pfenings, or 480 hellers, black money, and correſponds with $1\frac{1}{7}$ gulden white money.

The coins of Ratiſbon are as follow:

Of gold: the ducat of 4 guldens 10 kreitzers white money.

Of ſilver: the effective reichſthaler of 2 guldens.

According to Mr. Tillet, four weights are uſed at Ratiſbon:

The firſt, denominated *crown-weight,* is divided into 12 parts, and compoſed of a pile of 128 crowns. The firſt part is half the pile, and weighs 64 crowns; the ſix following parts weigh reſpectively 32, 16, 8, 4, 2, and 1 crown; and, laſtly, the 5 other parts are reſpectively ½, ¼, ⅛, and two quantities each $\frac{1}{16}$, of a crown.

The pile of 128 crowns is uſed for weighing gold in bars, and correſponds with 8088 grains of France, or 6635¼ grains troy-weight.

The ſecond weight is a ſmall pile compoſed of 11 parts; it correſponds in weight with 64 ducats, for weighing which it is uſed. It is equivalent to 4208 French grains, or 3452¼ grains troy-weight.

The third weight, or the marc for weighing ſilver and bread, conſiſts of 8 ounces, or 64 drachms: the ounce is divided into 8 drachms, and the drachm into 8 parts. This marc correſponds with 4632 grains of France, or 3800 grains troy-weight.

The fourth weight, or the pound, commercial weight, conſiſts of 2 marcs, 32 loths, 128 quintins, or 512 pfenings, and correſponds with 8777 grains troy-weight.

The centner is 100 pounds.

A ſchaf of wheat contains 4 meeſs, 16 vierlings, or 32 metzens.

A ſchaf of oats meaſures 4 meeſs, 28 vierlings, or 56 metzens.

An eimer of wine is 32 viertels, 88 kœpfe, or 176 ſeidels.

An eimer of beer is 64 kœpfe, or 128 ſeidels.

Cloth is meaſured by the ell.

REVEL.

In this city, ſituated on the ſouth ſhore of the Gulph of Finland, accounts are kept in rubles, each ruble conſiſting of 100 copecks.

The reichſthaler is 64 weiſſens, or wittens, or 80 copecks; and the thaler 52 wittens, or 65 copecks.

4 rubles make 5 reichſthalers
13 ditto . . . . 20 thalers
13 reichſthalers 16 ditto
4 wittens . . . 5 copecks.

The coins of Revel conſiſt of the Livonina, which is worth 96 copecks, coinage of 1755, or 112 copecks, coinage of 1764; and of pieces of 4 and 2 copecks each.

The marc, for weighing gold and ſilver, is compoſed of 16 loths, 64 quintins, or 256 oertleins.

The ſchifpfund is 20 liſpfunds, or 400 pounds.

The pound conſiſts of 16 ounces, 32 loths, or 128 quintins.

19 pounds of Revel make 20 pounds of St. Peterſburgh.

A laſt of wheat is 24 tonnen, or 72 loofs.

A tonne of wheat is 3 loofs, and of ſalt 4.

The loof is 3 kulmitz, or 36 ſtofs.

An oxhoft of wine meaſures 1½ ahm, 6 ankers, 180 ſtofs, or 720 quartiers.

A faſs of beer and of brandy is 128 ſtofs.

The ſtof of oil weighs 2½ pounds of Revel.

The ell, cloth meaſure, conſiſts of 2 feet, or 24 inches.

4 ells of Revel make 3 archines of Ruſſia.

RIGA.

Accounts are kept in Albertus reichſthalers, or rixdollars, each conſiſting of 80 ferdings.

The reichſthaler is alſo divided into 90 groſchen.

The coins circulating at Riga are as follow:

Of gold: the Dutch ducat, worth 2 rixdollars 15 ferdings, more or leſs.

Of ſilver: the Albertus reichſthaler of 80 ferdings, and the Livonina of 70 ferdings.

Of ſilver and copper: pieces of 5 ferdings, of 4 and 2 copecks.

Ruſſian ſilver currency and bank notes are received at variable prices; the former from 127 to 130 copecks, and the latter from 155 to 176 copecks, per Albertus rixdollar reſpectively.

The marc, for weighing precious metals, conſiſts of 8 ounces, 16 loths, or 64 quintins.

In the aſſaying of gold, the marc is divided into 24 carats, each carat into 12 grains; and in the aſſaying of ſilver, into 16 loths, each loth into 18 grains.

The ſchifpfund, commercial weight, is compoſed of 4 loofs, 20 liſpfunds, or 400 pounds.

The pound conſiſts of 2 marcs: the marc itſelf is the ſame as that uſed for weighing gold and ſilver, and has the ſame diviſions.

A laſt of wheat and of barley is 24 tonnen, 48 loofs, or 288 kulmitz, which correſpond with 16 chetwers of Ruſſia.

A laſt of rye is 22½ tonnen, 45 loofs, or 270 kulmitz, and meaſures 15 chetwers of Ruſſia.

A laſt of oats, peaſe, and malt, is 30 tonnen, 60 loofs, or 360 kulmitz, and meaſures 20 chetwers of Ruſſia.

The loof conſiſts of 6 kulmitz, 27 kannen, or 48 ſtofs, and is reckoned 1⅞ buſhel Engliſh meaſure.

8 loofs make 1 Ruſſian chetwer.

The fuder is compoſed of 6 ahms, 24 ankers, 120 viertels, or 720 ſtofs.

The Ruſſian wedra contains 10 ſtofs of Riga.

A tonne of beer meaſures 90 ſtofs.

The ell is 2 feet, or 24 inches.

13 ells of Riga make 10 archines of Ruſſia.

The courſe of exchange is as follows:

London receives 410 groſchen, more or leſs, per pound ſterling.

Amſterdam gives 105 current rixdollars, more or leſs, for 100 Albertus rixdollars.

Hamburgh either receives 102 Albertus rixdollars, more or leſs, for 100 rixdollars banco, or gives 102 rixdollars banco, more or leſs, for 100 Albertus rixdollars.

ROCHELLE.

In this town in France, ſeated on the Bay of Biſcay, accounts are kept in francs, each conſiſting of 100 centimes.

The coins circulating at Rochelle, as well as the weights, are referred to under the head of France.

A tonneau of wheat is 42 boiſſeaux.

The cent of ſalt is compoſed of 28 muids, or 672 boiſſeaux; and the muid of 24 boiſſeaux.

Brandy is ſold in francs per 27 velts.

ROME.

Accounts are kept in ſcudi moneta, or ſcudi Romani, each ſcudo conſiſting of 10 paoli, or giuli, and each paolo of 10 bajocchi.

The ſcudo is alſo divided into $3\frac{1}{3}$ teſtoni, 500 quatrini, or 1000 mezzi quatrini.

The ſcudo di ſtampa d'oro conſiſts of 20 ſoldi d'oro, or 240 denari d'oro: it is reckoned for $152\frac{3}{10}$ bajocchi, in reſpect to the payment of bills in ſcudi di ſtampa d'oro drawn upon foreign places, and negotiated at Rome; but it is reckoned for 152½ bajocchi in regard to the payment of bills drawn upon Rome from foreign places.

The coins of Rome are as follow:

Of gold: the doppia of 33 paoli; the ſcudo d'oro 16½ ditto; the zecchino 20½ ditto.

Of ſilver: the piaſtra vecchia of 10½ paoli; the ſcudo moneta 10 ditto; the teſtono 3 ditto; the papeta 2 ditto.

Of ſilver and copper: the paolo, or giulo, of 10 bajocchi; the carolino 7½ ditto; the bajocchello 2 ditto.

Of copper: the bajocco of 5 quatrini, or 10 mezzi quatrini; the mezzo bajocco 5 ditto; the quatrino 2 ditto; the mezzo quatrino.

The Roman pound, the ſtandard of which is kept in the Capitol, is divided into 12 ounces: according to Mr. Tillet, it is equivalent to 6386 French grains; wherefore it correſponds with 5239 grains troy-weight.

The pound by the public ſcale is 2 per cent heavier, and it is cuſtomary to deduct 4 per cent from the weight of goods.

The quintal is reckoned either 100, 160, or 250 pounds of the weight by public ſale.

A rubbo of corn is 4 quarti, 12 ſtaja, or 16 ſtarelli.

A bota of wine is 9 barili, 288 boccali, 1152 foglietti, or 4608 cartocci. The barile is 32 boccali, the boccalo 4 foglietti, and the foglietto 4 cartocci.

Cloth, ſilk ſtuffs, and linens, are meaſured either by the canna, the braccio, or the palmo.

ROSTOCK.

In this city of the Dutchy of Mecklenburg, in Germany, accounts are kept either in thalers of 48 ſchillings, or in zweydrittels, or two-third pieces of 32 ſchillings, each ſchilling conſiſting of 12 pfenings.

The thaler is 1½ reichs gulden, 2 Mecklenburg guldens, 3 marcs, 24 groſchen, 48 ſchillings, 192 wittens, or 576 pfenings.

The coins circulating at Roſtock are pieces of 32, 16, 8, 4, 2, and 1 ſchilling, of 6 and 3 pfenings, currency of Mecklenburg-Schwerin.

The coinage of the monies of Mecklenburg has been regulated ſince the year 1763 as follows:

A Cologne marc of fine ſilver is coined into 11⅓ thalers, 17 zweydrittels, or 34 marcs.

The ſtandard of thoſe coins is 9 pfenings. The ſmaller pieces are coined in the ſame proportion as to weight, but their ſtandard is only 7½ pfenings.

The ſchifpfund, commercial weight, is 20 liſpfunds, or 320 pounds; the liſpfund is 16 pounds.

The ſchifpfund, for weighing lead and iron, is 280 pounds.

A ſtone of flax is 20 pounds, and of wool and feathers 10.

The pound conſiſts of 2 marcs, 32 loths, or 64 quintilins.

A laſt of wheat, compoſed of 8 drœmts, or 96 ſcheffels, is reckoned 13½ quarters Wincheſter meaſure.

The laſt of oats renders about 15 quarters.

The meaſures for liquids are the ſame as thoſe at Hamburgh.

The ell is 2 feet, and 100 feet of Mecklenburg make 100⅝ feet of Roſtock.

ROTTERDAM.

In this city of Holland, accounts are kept in guldens, or florins, each gulden conſiſting of 20 ſtuyvers, and each ſtuyver of 16 penningen.

The other monies are referred to under the head of Amſterdam.

The pound, commercial weight, is the ſame as that at Amſterdam; but the retailers uſe another which is 5 per cent lighter than the former.

A laſt of corn is compoſed of $2\frac{2}{3}\frac{3}{2}$ hoeds, 29 ſakken, or 87 achtendeelen. This laſt is $3\frac{4}{7}$ per cent more capacious than that of Amſterdam, though they be reckoned alike.

28 laſts of Rotterdam make 29 laſts of Amſterdam.

Brandy is ſold per 30 viertels.

Olive and whale oil are ſold by the tonne of 240 ſtoopen.

The other meaſures for liquids, as well as the ell, are the ſame as thoſe at Amſterdam.

ROUEN.

In this city of France, accounts are kept in francs and cents.

Two weights are uſed at Rouen: the quintal *poids de marc* for weighing almoſt every deſcription of goods; and the quintal *poids de vicomté* for weighing wools. Independently of the latter being 6 per cent heavier, a draft of two pounds per cent is allowed to the purchaſer of goods by this weight; wherefore

100 pounds poids de vicomté make 108 pounds poids de marc.

A muid of wheat conſiſts of 12 ſetiers, 24 mines, or 96 boiſſeaux.

The ell for meaſuring cloths and ſilk ſtuffs is 516 lines of France; the ell for meaſuring linen 619⅕; and the foot 120.

RUSSIA.

Accounts are kept throughout this empire, in rubles, each conſiſting of 100 copecks.

The ruble is alſo divided into 10 griwnas, or grieveners, 33⅓ altins, 50 groſz, 100 copecks, 200 denuſchkas, or 400 poluſchkas.

The coins of Ruſſia are as follow:

Of gold: the Imperial of 10 rubles; the half Imperial of 5; the double ducat of 4½; and the ducat of 2¼.

Of ſilver: the ruble of 100 copecks; the half and quarter ruble of proportionate value; pieces of 15 and 10 copecks; the piat kopie of 5 copecks.

Of copper: pieces of 5, 2, and 1 copeck; the denuſchka of ½ copeck; and the poluſchka of ¼ copeck.

Dutch ducats and rixdollars, as well as Albertus rixdollars, are in circulation, and taken at various prices according to their weight.

14 rixdollars of Holland, or Albertus, ſhould weigh 1 Ruſſian pound.

Bank aſſignations are received in payment, and are ſubject to a diſcount of 30 per cent, more or leſs.

The Aſſignation Bank was inſtituted in 1768, and opened in 1770, at St. Peterſburgh and at Moſcow.

Several bank comptoirs were afterwards eſtabliſhed in others of the towns called government towns. Aſſignations of 100, 50, and 25 rubles, were iſſued upon payment of ſimilar ſums in copper money, which were refunded upon preſentation of thoſe aſſignations.

The Bank, however, at St. Peterſburgh was changed in 1786 into a *Reichs* or Imperial Aſſignation Bank. The former notes were all called in, and exchanged for new ones, iſſued on ſeveral ſorts of paper manufactured for the purpoſe. The preſent aſſignations of 100, 50, and 25 rubles, are on white paper; thoſe of 10 rubles on red paper, and of 5 rubles on blue paper. The Bank exchanges torn or injured notes for new ones, or repays the value on demand.

According to a declaration made by Government, the amount of the Bank aſſignations is never to exceed the ſum of one hundred million of rubles.

In the aſſaying of gold and ſilver, the unit of reference is divided into 96 ſolotnicks.

The coinage was regulated by an ukaſe of the 23d of November 1755, as follows:

The Imperial of 10 rubles to weigh $3\frac{85}{96}$ ſolotnicks of gold, of the purity of 88 ſolotnicks, or 22 carats.

A pound of gold of the purity of 94 ſolotnicks, or $23\frac{1}{2}$ carats, was coined into $117\frac{1}{4}$ ducats.

The ruble of ſilver to weigh $6\frac{1}{8}$ ſolotnicks, of the purity of 76 ſolotnicks.

An ukaſe of the 18th December 1763, regulated the coinage of the Ruſſian coins in the following manner;

The Imperial to weigh $3\frac{3}{4}$ ſolotnicks, and to be of the ſame purity as that fixed in 1755.

118 ducats, of the purity of 93 ſolotnicks, were ſtruck from a pound of gold.

17$\frac{1}{15}$ rubles, of the purity of 72 ſolotnicks, or 9 ounces, were ſtruck from a pound of ſilver.

Another alteration has been lately introduced in reſpect to the coinage of Ruſſia, by an ukaſe of Paul I., confirmed by another ukaſe of Alexander I., and dated in the month of December, 1801.

22$\frac{3}{4}$ rubles are to be ſtruck from a pound of ſilver of the purity of 83$\frac{1}{5}$ ſolotnicks; and the Imperials and half Imperials, being the only monies of gold to be coined in Ruſſia, are to be of the purity of 94$\frac{1}{2}$ ſolotnicks.

The *berckowitz*, or berquet, commercial weight, conſiſts of 10 poods, or 400 pounds, and the pood of 40 pounds.

The pound is divided into 96 ſolotnicks, and the ſolotnick into 2, 4, or 8 parts.

The czetwer, or chetwert, dry meaſure, is compoſed of 2 oſmins, 4 pajacks, 8 chetwericks, or 64 garnitzen.

16 chetwerts are reckoned 1 laſt; and the chetwert is about 5$\frac{1}{2}$ buſhels Wincheſter meaſure.

The caſk, liquid meaſure, contains 40 wedras, 320 kruſkas, or 3520 charkas. The wedra is 8 kruſkas, and the kruſka 11 charkas.

A hogſhead of Bordeaux wine is 19 wedras at St. Peterſburgh; and 3 kruſkas make 1 gallon of beer, Engliſh meaſure.

The archine, or Ruſſian ell, is divided into 16 werſchocks, and is equivalent to 28 inches Engliſh; wherefore

7 yards make 9 archines.

The werſte, or Ruſſian mile, meaſures 500 ſachines, 1500 archines, or 24000 werſchocks, and correſponds with 3500 Engliſh feet, or 3400 Rheniſh feet.

The ſachine is 3 archines, 48 werſchocks, and correſponds with 7 Engliſh feet.

The Engliſh foot and the Rheniſh foot are both uſed in Ruſſia.

34 Rheniſh feet make 35 Engliſh feet.

The deſſaetina, land meaſure, is 560 Rheniſh feet long, 210 wide, and contains 117600 ſquare Rheniſh feet.

N. B. The preceding weights and meaſures are general throughout the empire of Ruſſia, excepting in the poſſeſſions recently acquired, where their former weights and meaſures are ſtill in uſe, which, however, are reduced into thoſe of Ruſſia in their official accounts and tranſactions.

ST. CROIX, OR SANTA CRUZ.

In this iſland, as well as in that of St. Thomas, both belonging to Denmark, accounts are kept in piaſtres, pieces of eight, or current dollars of 8 reals, or bits.

The hard dollar is worth 10 reals, or bits, at each of thoſe iſlands. St. Thomas is the principal of the group called the Virgin Iſlands; and St. Croix is to the ſouthward of that group.

The coins in circulation conſiſt of hard dollars, joaneſe, guineas, and bits.

The weights and meaſures are the ſame as thoſe of Denmark.

ST. EUSTATIA.

In this iſland, as well as in that of Saba, both belonging to the Dutch; and at the iſland of St. Martin, which is jointly poſſeſſed by the French and the Dutch, accounts are kept in dollars, each conſiſting of 8 reals, and each real of 6 ſtivers.

The hard dollar, denominated *gourde*, is worth 11 reals.

The weights and meaſures are referred to under the head of Amſterdam.

ST. GALL.

In this city of Switzerland, accounts are kept in guldens, or florins, each florin conſiſting of 60 kreitzers, and each kreitzer of 8 hellers.

The florin is alſo divided into 10 ſchillings, 15 batzen, 60 kreitzers, or 480 hellers.

Theſe monies are diſtinguiſhed by the appellations of exchange money, and of current money.

1190 florins exchange money make 1383 current florins.

The Spaniſh piſtole, and the old louis d'or of France, are each worth 6 florins 36⅔ kreitzers of exchange, or 7 florins 58 kreitzers currency.

The French gold piece of 24 livres tournois is worth $8\frac{1}{20}$ florins of exchange, or 11 current florins.

Two weights are uſed at St. Gall :

100 pounds heavy weight make 125⅔ pounds light weight.

There are two ells :

100 ells linen meaſure make 130 ells cloth meaſure.

ST. MALO.

In this ſea-port of France, accounts are kept in francs and cents.

The weight denominated *poids de marc* is uſed at St. Malo.

The tonneau of wheat is compoſed of 31¼ boiſſeaux, and weighs about 2250 pounds.

The boiſſeau is divided into 12 godets.

A jutte of ſalt conſiſts of 33 pots, and 21 juttes make 1 tonneau, which weighs about 2600 pounds.

Two ells are uſed at St. Malo: the ell of Bretagne of 50 inches, and the Paris ell of 524 lines.

ST. SEBASTIAN.

Accounts are kept in this city of Biſcay in reals of vellon, each real conſiſting of 34 maravedis.

The other coins are referred to under the head of Spain.

The quintal macho, for weighing iron, conſiſts of 150 pounds.

Salted cod-fiſh is ſold by the quintal of 105 pounds; grocery by that of 100 pounds.

The quintal, for weighing every other deſcription of goods, conſiſts of 101 pounds, and is equivalent to 107 pounds of Caſtille.

The meaſures are deſcribed under the head of Spain.

At Bilboa, cod-fiſh is ſold by the quintal of 104 pounds of Bilboa.

At St. Antler, where the weight of Caſtille is uſed, the quintal of iron is 155 pounds, of cod-fiſh 112, and of cocoa 107.

SARDINIA.

Accounts are kept in this iſland in lire, each lira conſiſting of 20 ſoldi, and each ſoldo of 12 denari.

The lira is alſo divided into 4 reali of Sardinia, and the real into 5 ſoldi, 30 calari, or 60 denari.

The ſcudo of Cagliari is 10 reals, and the ſcudo of Piedmont 7½ reals 1 calaro.

The Spaniſh hard dollar is worth about 11 reals 1 ſoldo.

The cantara conſiſts of 104 pounds, and the pound of 12 ounces.

A reſtiera of wheat meaſures 3 ſtarelli, or 48 imbutti; and the ſtarello weighs about 96 pounds of Sardinia.

Cloths are meaſured by the palmo.

100 palmi of Sardinia make 124$\frac{7}{9}$ palmi of Cagliari.

SAYD, OR SIDON.

In this city of Syria, accounts are kept in piaſtres, or medins, conſiſting of 80 aſpers each.

Two ſorts of weights are uſed at Sayd:

The Damaſcus rotolo, for weighing ſilk and cotton yarn, is 600 drachms. The rotolo of Acre ſerves for weighing every other deſcription of goods.

100 rotolos of Acre make 127$\frac{8}{9}$ Damaſcus rotolos.

The pik of Sayd is equal to that of Aleppo.

SCOTLAND.

Since the Union of Scotland and England, on the 1ſt of May, 1707, by the name of the Kingdom of

Great Britain, the Engliſh coins, weights, and meaſures, are uſed in the commercial places of Scotland, and are referred to under the head of England.

As, however, the Scotch weights and meaſures have ſtill been retained in many places by the force of habit, I think it neceſſary to ſubjoin the undermentioned deſcription.

The Scotch pound conſiſts of 12 ounces, and weighs 7616 grains troy-weight.

92 pounds of Scotland make 100 pounds avoirdupois
90 ditto . . . . 119 ditto troy-weight.

A firlot of wheat meaſures $21\frac{1}{4}$ pints of Scotland, and that of barley 31.

85 firlots of barley make 124 firlots of wheat
112 firlots of wheat make 113 Engliſh buſhels
36 firlots of barley make 53 ditto ditto.

The pint of Scotland meaſures $103\frac{404}{1000}$ cubic inches of England.

31 pints of Scotland make 91 beer pints of England
12 ditto . . . . 43 wine ditto.

The Scotch ell is $37\frac{1}{5}$ Engliſh inches.

30 ells of Scotland make 31 Engliſh yards
23 ditto . . . . 19 ditto ells.

The Scotch foot is $12\frac{1}{15}$ Engliſh inches.

180 feet of Scotland make 181 feet of England.

The Scotch mile meaſures 5952 Engliſh feet.

118 miles of Scotland make 133 miles of England.

The Scotch acre of land meaſures $55353\frac{3}{5}$ ſquare feet Engliſh.

84 acres of Scotland make 107 acres of England.

SIAM.

In this kingdom of Aſia, accounts are kept in ticals, each conſiſting of 16 vis, and each vis of 9 renguis.

The catti is 20 taels, or tales, 80 ticals, 320 mayons, or miames, 640 fouangs, 512000 cauris.

10 mayons make 1 tale of China; wherefore
10 tales of Siam make 8 Chineſe tales.

The coins of Siam are as follow:

Of gold: the tical, worth 10 ticals of ſilver.

Of ſilver: the tical, the mayon, and the fouang.

Of lead: the rengui.

The Spaniſh dollar is worth 8 mayons.

2 hard dollars are equal to 3 ſilver ticals of Siam.

The current pagoda of India is 2½ ticals, or 10 mayons; and 4 pagodas make 1 gold tical of Siam.

The tical of gold, and that of ſilver, weigh 5½ pagodas each, correſponding with 281⅞ grains troy-weight. The purity of the former is of 79½ touch, and that of the latter of 98.

The pic, commercial weight, conſiſts of 100 cattis, 2000 tales, 8000 ticals, or 48000 pagodas.

The chi, meaſure for rice and grain, contains 40 feſtes, or 1600 fats. A feſte of rice weighs 100 cattis.

The can, or canan, liquid meaſure, is 4 leengs.

The roe-neug, long meaſure, is divided into 20 tods, 80 fen, 1600 voua, or 3200 ken; and the voua into 2 ken, 4 fok, 8 keuh, or 96 doits. The doit is 8 grains of rice.

SICILY.

At Palermo, Meſſina, and in the other parts of this iſland, accounts are kept in oncie, or ounces, each oncia conſiſting of 30 tari, and each taro of 20 grani. The oncia is alſo divided into $2\frac{1}{2}$ ſcudi, 5 fiorini, 30 tari, 60 carlini, 450 ponti, 600 grani, 3600 piccioli.

The coins of Sicily are as follow:

Of gold: the oncia of 30 tari; the double oncia of 60 tari.

Of ſilver: the ſcudo of 12 tari; the $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{6}$, $\frac{1}{12}$ of a ſcudo; the carlino of 10 grani.

The Spaniſh hard dollar is current for 12 tari 12 grani.

Three weights are uſed in Sicily:

The rotolo groſſo of $2\frac{3}{4}$ pounds, or 33 ounces.

The rotolo ſottile of $2\frac{1}{2}$ pounds, or 30 ounces.

The pound of 12 ounces.

The cantaro peſo groſſo of 100 rotoli groſſi, is equivalent to 110 rotoli ſottili, or 275 pounds of Sicily.

The cantaro peſo ſottile of 100 rotoli ſottili, correſponds with $90\frac{10}{11}$ rotoli groſſi, or 250 pounds of Sicily.

The ſalma generale, corn meaſure, is 16 tomoli; and the ſalma groſſa, for pulſe, is 20 tomoli.

4 ſalme groſſe make 5 ſalme generali.

A tonna of wine contains 12 ſalme.

The canna of Sicily is 8 palmi.

SMYRNA.

Accounts are kept at Smyrna in piaſtres, each conſiſting of 40 paras.

The piaſtre is alſo divided into 80 great aſpers, 100 cents, or 120 aſpers.

The other coins are referred to under the head of Turkey.

The Imperial and Hungarian ſequins are worth about $8\frac{5}{8}$ piaſtres, the Venetian 10, and the Dutch $9\frac{1}{2}$.

The Imperial tallaro, or reichſthaler, and the Spaniſh hard dollar, are worth about 4 piaſtres each.

The cantaro, or quintal, conſiſts of $7\frac{1}{2}$ batmans, $22\frac{1}{2}$ chequees, 45 okes, 100 rotolos, or 18000 drachms.

A quintal of cotton wool, and of tin, is only 44 okes.

The rotolo is 180 drachms; and the oke, which is 400 drachms, correſponds with $2\frac{3}{4}$ pounds avoirdupois.

4 rotolos of Smyrna make 1 rotolo of Aleppo.

A chequee of 800 drachms of goats' wool generally renders at London $5\frac{1}{6}$ pounds avoirdupois; a teffee of 610 drachms of Bruſſa ſilk, $2\frac{3}{4}$ pounds; a chequee of 250 drachms of opium, $1\frac{5}{8}$ pound; a quintal of fruit of 100 rotolos, 1 hundred weight; and a quintal of cotton wool of 100 rotolos, 106 pounds.

Gold and ſilver lace is ſold by the metical of $1\frac{1}{2}$ drachm.

A fortin of wheat meaſures 4 quillots, $4\frac{1}{2}$ of which make 1 charge of Marſeilles.

The pike is $\frac{3}{4}$ of an Engliſh yard.

SPAIN.

In this extenſive monarchy, accounts are generally kept in *reales*, each real conſiſting of 34 maravedis.

There are ſeveral ſorts of reals, differing from each other either in name or in value.

The *real de vellon*, or real of ſilver and copper, is a $\frac{1}{20}$th part of a hard dollar, and worth $8\frac{1}{2}$ quartos, or 34 maravedis of vellon. It is the moſt current coin in Spain.

The *real de plata provincial* is a $\frac{1}{10}$th part of a hard dollar, and worth 17 quartos, or 68 maravedis of vellon. This real is alſo denominated *real de plata nueva,* or real of new plate*.

The *real de plata antigua,* or real of old plate, is worth 16 quartos, 34 maravedis of plate, or 64 maravedis of vellon. This real, 10$\frac{5}{8}$ of which make a hard dollar, and 8 a dollar of exchange, is moſtly uſed in reſpect to tranſactions with foreign countries.

The *real de plata Mexicana,* or Mexican real of plate, is an $\frac{1}{8}$th part of a hard dollar, and worth 34 Mexican maravedis of plate, or 85 maravedis of vellon.

There are four other ſorts of reals, which are referred to under the heads of Alicante, Barcelona, and Valencia.

Monies of Exchange.

The *doblon de plata ó de cambio,* or piſtole of exchange, is 32 reals of plate, 60 reals 8 maravedis of vellon, 1088 maravedis of plate, or 2048 maravedis of vellon.

The *peſo de plata ó de cambio,* or dollar of exchange, is one-fourth of a piſtole, and worth 8 reals of plate, 15 reals 2 maravedis of vellon, 128 quartos, 272 maravedis of plate, or 512 maravedis of vellon.

The *ducado de plata ó de cambio,* or ducat of exchange, is worth 11 reals 1 maravedi of plate, 20 reals 25$\frac{15}{17}$ maravedis of vellon, 375 maravedis of plate, 705$\frac{15}{17}$ maravedis of vellon. The ducat is divided into 20 ſueldos, and the ſueldo into 12 dineros.

Monies uſed in the Inland Trade.

The *doblon de plata ſenſillo* is 60 reals, or 2040 maravedis of vellon.

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* The Spaniſh word *plata* means ſilver.

The *peſo ſenſillo*, or *peſo provincial*, is 15 reals, or 510 maravedis of vellon.

The *ducado de vellon* is 11 reals, or 374 maravedis of vellon.

The coins of Spain are as follow:

		Vellon.	
		Reals.	Mrs.
Of gold:	the doblon de á 8 eſcudos, or *doubloon*, is	320	—
	the medio doblon, or doblon de á 4	160	—
	the doblon de oro efectivo, or *piſtole*	80	—
	the eſcudo de oro efectivo	40	—
	the eſcudito, or coronilla nueva	20	—
Of ſilver:	the peſo duro, or *hard dollar*	20	—
	the eſcudo de vellon, or ½ peſo	10	—
	the peſeta Mexicana, or ¼ ditto	5	—
	the real de plata Mexicana	2	17
Of ſilver and copper:	the peſeta provincial	4	—
	the real de plata provincial	2	—
	the real of vellon	1	—
Of copper:	the pieza de 2 quartos	0	8
	the quarto	0	4
	the ochavo	0	2

The gold coins above mentioned are of the new coinage of 1772. Thoſe of the former coinage which ſtill remain in circulation bear a premium: 10 quartos, or 40 maravedis, are allowed upon a doblon de á 8 eſcudos, and a proportionate premium upon the others.

The *marco Caſtellano*, or marc of Caſtille, for weighing gold, conſiſts of 8 onzas, 50 caſtellanos, 64 ochavas, 128 adarmes, 400 tomines, or 4800 granos.

The ſame marc, for weighing ſilver, is compoſed of 8 onzas, 50 caſtellanos, 64 ochavas, 128 adarmes, 384 tomines, or 4608 granos.

In the aſſaying of gold, the caſtellano is divided into 24 quilates, or carats; the carat into 4 grains, and the grain into 8 parts.

In the aſſaying of ſilver, the marc is divided into 12 dineros, or pennyweights, and the pennyweight into 24 grains.

The coinage of gold and ſilver is regulated ſince the year 1772 as follows:

A marc of gold of the purity of 21¾ carats, incluſive of 2 tomines for the remedy of the weight, and of $\frac{1}{12}$ carat for the remedy of the alloy, is coined into 8½ doblones de á 8, 17 doblones de á 4, 34 doblones efectivos, or 68 eſcudos efectivos.

A marc of ſilver of the purity of 10¾ pennyweights, incluſive of 2 tomines for the remedy of the weight, and of 1 grain for the remedy of the alloy, is coined into 8½ peſos duros, 17 medios peſos, 34 peſetas Mexicanas, or 68 reales de plata Mexicana.

The proportion between gold and ſilver in Spain is as 1 to 16.

The marc of Caſtille is uſed by the apothecaries, and divided into 8 onzas, 64 dracmas, 192 eſcrupulos, 384 obolos, 1152 caractéres, or 4608 granos.

The onza, or ounce, for weighing jewels, conſiſts of 140 quilates, or carats; and the carat of 4 grains is equal to four of the grains uſed in reſpect to the marc ſilver weight.

The libra, or pound, commercial weight, is divided into 2 marcs of Caſtille, 16 ounces, or 9216 grains.

The quintal conſiſts of 4 arrobas; or 100 pounds of Caſtille, and the arroba of 25 pounds.

The cahiz, corn meaſure, contains 12 fanegas, 48 quartillas, or 144 celemines.

The fanega is 12 celemines, and meaſures 4322¾ cubic inches of Burgos: the celemin is divided into 2, 4, 8, 16, 32, or 64 parts.

A moyo of wine is compoſed of 16 cantaras, or 128 azumbres.

The cantara, or arroba, is 8 azumbres, or 32 quartillos.

The quartillo contains 17 Caſtille ounces of river water, and meaſures 38⅔ cubic inches of Burgos.

An arroba of oil weighs 25 pounds of Caſtille of the ſame liquid, and is divided into 2 medias arrobas, 4 quartillos, 25 libras, or 100 quarterones, or panillas.

The vara, cloth meaſure, is 3 feet, 4 palmos, 36 inches, 48 *dedos*, or finger's breadth, or 432 lines. It is alſo divided into 3, 6, 8, or 16 parts.

The codo, for meaſuring timber and maſts, is ⅔ of the vara, or 2 feet, and conſiſts of 8 palmos de Ribera.

The *eſtado, braza, toeſa*, or fathom, is 6 feet.

The *pie Burgales*, or foot of Burgos, is divided into 12 pulgadas, or inches, and the inch into 12 lineas, or lines.

The cuerda is 33 palmos de vara, or 99 palmos de Ribera.

The yugada, land meaſure, is compoſed of 50 fanegadas, each of which is generally reckoned 400 eſtadales: the eſtadal is 12 feet.

The aranzada, for meaſuring vineyards, is 73⅓ varas. 144 aranzadas make 121 fanegadas.

Since the year 1766, the *legua*, or league of Caſtille, is 8000 varas, or 24000 feet of Burgos.

The *legua juridica* is 5000 varas, and is divided into

3 millas, or miles, the milla into 8 eſtadios, and the eſtadio into 125 paſos of 5 feet each.

The *legua maritima*, or marine league, is 6666⅔ varas.

20 marine leagues, or 60 miles of Spain, make 1 degree.

STETTIN.

In this city, the capital of Pruſſian Pomerania, accounts are kept in thalers, or rixdollars, each conſiſting of 24 gute groſchen, and each gute groſchen of 12 fierkens currency.

The thaler is alſo divided into 1½ gulden, 24 gute groſchen, 36 ſchillings, 72 ſchilling-ſundiſch, 96 dreyers, 144 wittens, or 288 fierkens.

The other coins, deſcribed under the head of Berlin, are current at Stettin.

The ſchifpfund, commercial weight, is 2½ centners, 20 liſpfunds, or 280 pounds.

The centner is 112 pounds, and the liſpfund 14.

The ſtein, or ſtone of wool, is 21 pounds; and the light ſtone 10.

A laſt of corn is 4 wiſpels, 8 drœmts, 96 ſcheffels, or 1536 metzens, and meaſures about 14¾ Wincheſter quarters.

1 chaldron of coals, Newcaſtle meaſure, renders 34⅓ bergſcheffels, 1 of which is equal to 1½ ſcheffel of Berlin.

An anker of wine is 52 nœſſels.

Cloth is meaſured by the ell.

The courſe of exchange is as follows:

Amſterdam receives 142 current rixdollars, more or leſs, for 100 rixdollars banco.

Hamburgh receives 151 current rixdollars, more or leſs, for 100 rixdollars banco.

London receives 6 rixdollars 3 gute groſchen currency, more or leſs, per pound ſterling.

STRALSUND.

In this city, the capital of Swediſh Pomerania, accounts are kept either in thalers, or rixdollars, each conſiſting of 48 ſchillings, and each ſchilling of 12 pfenings; or in Pommerſche-guldens of 24 ſchillings, each of 12 pfenings.

The thaler is alſo divided into 2 guldens of Pomerania, 6 marcs, 24 groſchen, 48 ſchillings, 96 ſechſlings, 192 wittens, or 576 pfenings.

The coins in circulation are as follow:

Of gold: the Adolphus of 5 thalers.

Of ſilver: pieces of 16, 8, 4, 2, 1, and ½ groſchen.

The ſchifpfund, commercial weight, conſiſts of 2½ centners, 20 liſpfunds, or 280 pounds.

The centner is 112 pounds; the liſpfund 14; and the ſtein of wool 10.

The grocers and retailers make uſe of another weight, which is 5½ per cent lighter, and is equal to that of Cologne.

A laſt of corn contains 8 drœmts, 32 tonnes, 96 ſcheffels, 384 fehrts, or 1586 metzers.

The laſt of wheat renders about 14⅜ Wincheſter quarters, and that of oats about 15¼.

The ſtubgen, liquid meaſure, contains 4 pottles of Stralſund.

Cloth is meaſured by the ell.

The courſe of exchange is as follows:

Amſterdam receives 140 current rixdollars, more or leſs, for 100 rixdollars banco.

Hamburgh receives 148 current rixdollars, more or leſs, for 100 rixdollars banco.

Stockholm receives 133 current rixdollars, more or leſs, for 100 rixdollars new coinage.

STRASBURGH.

Accounts are kept in this city in francs and cents.

The coins circulating at Straſburgh are referred to under the head of France.

The commercial weight is the poids de marc; the retailers make uſe of another weight which is 4 per cent lighter.

A ſeſter, or ſetier of corn, is 4 vierlings, or 16 maſſels.

The fuder, liquid meaſure, contains 24 ohms, 576 maas; and the maas, or pot, is 4 ſchoppen, or chopines.

Cloth is meaſured by the Paris ell, or by the brache of Straſburgh.

43 Paris ells make 95 Straſburgh braches.

SURAT.

In this city of Hindooſtan, in the Province of Guzerat, in India, accounts are kept in rupees, each conſiſting of 16 annas, or 32 ponnes.

The coins of Surat are as follow:

Of gold : the rupee of 4 pagodas, or 14 ſilver rupees; the pagoda of 3½ ſilver rupees.

Of ſilver : the rupee; the half and quarter rupee; the mamudi, 2½ of which make generally 1 ſilver rupee.

Of copper : the pacha of 68 padens.

The tola, for weighing gold and ſilver, conſiſts of 32 vales, 96 ruttes, or 576 chonvels.

The candy, commercial weight, is compoſed of 20 maunds; the maund of 40 ſeers; and the ſeer of 30 pice.

The Surat maund of 40 ſeers is equivalent to 37 pounds 7⅜ ounces avoirdupois. The maund is, however, ſometimes compoſed of a greater number of ſeers, from 41 up to 46; and the candy is alſo not uniformly confined to 20 maunds.

For inſtance, pepper and ſandal wood are ſold by the Bombay candy of 21 maunds; and cotton, the great ſtaple commodity of the Surat market, is ſold by the Surat candy of 21 maunds.

The guz, long meaſure, is 28 inches; the cobit, or cubit, 18.

9 guz make 14 cubits.

The Engliſh yard is in common uſe for European goods.

SURINAM.

Accounts are kept at Surinam, Demerary, Iſequibo, and Paramariba, in guldens, or florins, each gulden conſiſting of 20 ſtuyvers, and each ſtuyver of 16 penningen.

All the Dutch coins are current in thoſe ſettlements, bearing an augmentation of 20 per cent in their value.

	Florins.	Stivers.
The ryder . . of 14 florins of Holland, is	16	16
The ducat . . of 5¼ ditto	6	6
The piece . . of 3 ditto	3	12
The rixdaler of 2½ ditto	3	0
The florin	1	4

And the other Dutch coins in the ſame proportion.

The weights and meaſures are referred to under the head of Amſterdam.

SWEDEN.

Accounts are kept in this kingdom in rikſdahlers, or rixdollars, each conſiſting of 48 ſkillings, and each ſkilling of 12 oeres, or pfenings.

The rikſdahler is divided into 6 ſilver dahlers, 18 copper dahlers, 24 ſilver marcs, 72 copper marcs, 192 ſilver oeres, 576 copper oeres, 768 ſilver oerleins, or 2304 copper oerleins.

All the monies of Sweden are diſtinguiſhed by the names of *ſilfver-mynt* and *kopper-mynt*, or ſilver money and copper money. The value of the former is three times that of the latter.

The coins of Sweden are as follow:

Of gold: the Swediſh ducat, which, as well as that of Holland, is worth 1 rikſdahler 46 ſkillings.

Of ſilver: the rikſdahler of 6 ſilver dahlers, 18 copper dahlers, or 48 ſkillings; the ⅔, ⅓, ⅙, $\frac{1}{12}$, and $\frac{1}{24}$ of a rikſdahler, of proportionate value.

Of copper: pieces of 12, 9, 6, 4½, 3, 2½, and 1½ copper dahler; and pieces of 6 and 3 copper oeres; the rundſtycke of 1 copper oere; and the ½ rundſtycke.

The coinage of theſe monies is regulated as follows:

60$\frac{1}{2}$ ducats are ſtruck from a marc of gold of the purity of 23 carats 5 grains.

7$\frac{1}{5}$ rikſdahlers are ſtruck from a marc of ſilver of the purity of 14 lods 1 grain.

540 dahlers in plates of copper, worth from 1$\frac{1}{2}$ dahler to 12 dahlers each, and 900 dahlers in pieces, worth from $\frac{1}{2}$ oere to 6 oeres each, are ſtruck from a ſkippund, victualie weight, of pure copper.

In the aſſaying of gold, the marc is divided into 24 carats, the carat into 12 grains; and in the aſſaying of ſilver, into 16 lods, the lod into 18 grains.

The marc, for weighing gold and ſilver in bars, conſiſts of 16 lods, 64 quintins, or 4384 as, and correſponds with 3251$\frac{3}{4}$ grains troy-weight.

The pile of 32 ducats, uſed for weighing ducats, is equivalent to 1721$\frac{1}{5}$ grains troy-weight.

The pound, apothecaries weight, correſponds with 5501 grains troy-weight.

Four weights are uſed in Sweden, in reſpect to the ſale of merchandize.

The pound *victualie-wigt*, or weight for proviſions, conſiſts, according to the ſtatutes, of 8848 as, and correſponds with 6563 grains troy-weight.

The mark, *berg-werk-wigt*, or miners' weight, conſiſts of 7821$\frac{70}{125}$ as, and is equivalent to 5801$\frac{5}{8}$ grains troy-weight.

The mark, *land-ſtaten-wigt*, or country and city weight, conſiſts of 7450$\frac{2}{125}$ as, and is equivalent to 5526 grains troy-weight.

The mark, *yern-wigt*, or *ſtapelſtad-wigt*, for weighing iron, and goods in *entrepôt*, conſiſts of 7078$\frac{2}{5}$ as, and is equivalent to 5250$\frac{1}{4}$ grains troy-weight.

The ſkippund is compoſed of 20 liſpunds, or 400 pounds, victualie-wigt, and ſerves for weighing almoſt every deſcription of goods.

The centner is 120 pounds; the waag 165; the ſten 32; and the liſpund 20.

The pound victualie-wigt is divided into 32 lods, the lod into 4 quintins, and the quintin into 69⅛ as.

The as of Sweden is the ſame as that of Holland.

The tunna, corn meaſure, is compoſed of 2 ſpanns, 8 fierdings, 32 kappes, 56 kannas, 112 ſtops, 448 quarters, or 1792 jungfres.

In meaſuring, 4 kappes are allowed to a tunna of wheat, rye, barley, oats, and peaſe; 6 kappes to a tunna of malt; and 2 kappes to a tunna of ſalt.

The tunna meaſures 5¾ cubic feet of Sweden.

The fuder is compoſed of 2 pypen, 4 oxhufs, 6 ahms, 2 ambares, 24 ankares, 360 kannas, 720 ſtops, 2880 qwarters, or 11520 jungfres.

The kanna meaſures 172⅘ cubic inches of Sweden.

The mil, or mile, is reckoned 18000 Swediſh ells.

The ruthe is 8 ells, 16 feet, or 192 inches.

The faum, or fathom, is 3 ells, or 6 feet.

The allen, or ell, is 2 feet, or 24 inches.

The fotz, or foot, is 12 inches, or 144 lines.

TOULON.

Accounts are kept in this ſea-port of France in francs and cents.

The pound of Toulon is 14 per cent leſs than the pound poids de marc.

The charge, corn meaſure, is 3 ſetiers, or $4\frac{1}{2}$ émines.

100 émines of Toulon make 105 émines of Marſeilles.

The millerolle, liquid meaſure, is 4 eſcandeaux. It contains 130 pounds of river water poids de marc, and meaſures 17 gallons of London, or 68 pintes of Paris.

The other meaſures are referred to under the head of Marſeilles.

TRIESTE.

In this free port of Carniola, ſituated on a Gulph collateral to the Gulph of Venice, accounts are kept in fiorini, or guldens, each fiorine conſiſting of 60 crazie, or cruitzers, currency.

The fiorine is 5 lire, 60 crazie, 100 ſoldi, or 240 denari.

The lira is divided into 20 ſoldi, and the ſoldo into 12 denari.

The coins circulating at Trieſte are as follow:

Of gold: the Imperial zecchino, worth about $6\frac{1}{4}$ fiorini; and the Venetian about $6\frac{2}{3}$.

Of ſilver: the talaro, or reichſthaler eſpecie de convencion, worth about $2\frac{2}{3}$ fiorini; and the Spaniſh dollar $2\frac{3}{4}$.

The pound, or pfund of Vienna, the libbra groſſa, and the libbra ſottile of Venice, are uſed at Trieſte for weighing the ſeveral deſcriptions of goods.

100 pounds of Vienna make $117\frac{1}{2}$ pounds Venetian great weight, and 185 pounds Venetian ſmall weight.

The ſtaro veneto, corn meaſure, conſiſts of 3 pollonicky.

100 ſtara correſpond with 50 charges of Marſeilles, 114 ſacchi of Leghorn, and 70 emine of Genoa.

An orna of oil is compoſed of 36 boccali, and weighs 107 pounds of Vienna.

Brandy is ſold by the barile of 46 boccali.

A barrel of wine is 18 gallons Engliſh.

Cloth is meaſured by the braccio.

TRIPOLI.

In this State, upon the coaſt of Barbary, in Africa, accounts are kept in piaſtres, each conſiſting of 13 grimellins, or 52 aſpers.

The value of the foreign coins circulating at Tripoli varies according to their weight and ſtandard.

Gold and ſilver, either in bars or in coins, are weighed by the metecalo, 50 of which correſpond with the Venetian marc, which is equivalent to 3686⅓ grains troy-weight.

The cantaro, commercial weight, conſiſts of 100 rotolos, the rotolo of 16 ounces, and the ounce of 8 termines.

The caffiſo, corn meaſure, is 20 tiberi.

A mataro of oil weighs 42 rotolos.

7 matari of Tripoli make 10 miri of Venice.

Cloth is meaſured by the pike, which is 2⅕ palmi of Genoa.

TUNIS.

In this State of Barbary, in Africa, accounts are kept in piaſtres, each conſiſting of 52 aſpers, and each aſper of 12 burboes.

The maboob, or ſequin, is 4½ piaſtres; the piaſtre 16 caroobs; and the caroob 3¼ aſpers.

Precious metals and jewels are weighed by the ounce conſiſting of 8 termines, and equivalent to $1\frac{1}{4}$ oncia peſo ſottile of Venice.

The cantaro, commercial weight, conſiſts of 100 rotolos, or 1600 ounces.

A caſſiſe of corn contains 16 tumulos, and a tumulo of good wheat weighs about 50 pounds of Tunis.

A mataro of oil contains 2 mataros of wine; it weighs 32 rotolos, and correſponds with 5 gallons Engliſh.

Several ſorts of pikes are uſed.

45 pikes cloth meaſure make 48 pikes meaſure for ſilk ſtuffs, or 64 pikes linen meaſure.

TURIN.

Accounts are kept at Turin, and in the other cities of Piedmont, in lire, each lira conſiſting of 20 ſoldi, and each ſoldo of 12 denari.

The coins of Piedmont are as follow:

		Weight.	Value.
Of gold:	the old piſtole, or doppia	$125\frac{1}{3}$ grs	$16\frac{3}{8}$ lire
	that of 1741 and 1742	$134\frac{5}{6}$ do.	18 do.
	the zecchino of 1744	65 do.	$9\frac{3}{4}$ do.
	the new piſtole, or doppia, 1755		24 do.
Of ſilver:	the old eſcudo	21 denari	$4\frac{1}{2}$ do.
	the eſcudo of 1733 and 1735	$23\frac{1}{4}\frac{3}{8}$ do.	5 do.
	the new eſcudo of 1755		6 do.
	the ducaton	$24\frac{5}{6}$ do.	$5\frac{1}{2}$ do.

The marc, for weighing gold and ſilver, conſiſts of 8 ounces, the ounce of 24 denari, the denaro of 24 grani, and the grano of 24 granotini.

In the aſſaying of gold, the ounce is divided into 24 carats; the carat into 24 denari, and the denaro into 24 grani.

In the aſſaying of ſilver, the ounce is divided into 12 denari, and the denaro into 24 grani.

The new piſtole, or doppia of Piedmont, weighs 7 denari 12 grani 6 granotini of gold, of the purity of 21¾ carats.

The new eſcudo weighs 27 denari 10 grani 23⅛ granotini of ſilver, of the purity of 10⅞ denari.

The proportion between gold and ſilver is as 1 to 14⅗.

The pound, apothecaries weight, is compoſed of 12 ounces, the ounce of 8 drachms, the drachm of 3 ſcruples, or 60 grains.

The pound, commercial weight, conſiſts of 12 ounces; the ounce of 8 ottavi; and the ottavo of 3 denari, or 72 grani.

The carat, for weighing diamonds, is divided into 4 grains, equal to thoſe into which the marc is ſubdivided.

The rubbo is 25 pounds, or 37½ marcs.

The emine, corn meaſure, contains 2 quartere, or 16 copelle.

The brenta, liquid meaſure, is 36 pinti, 72 boccali, or 144 quartini.

Cloth is meaſured by the raſo.

TURKEY.

Accounts are kept in Turkey in piaſtres, each piaſtre being divided either into 40 paras, 80 great aſpers, 100 parts called mines, or medines, or 120 aſpers.

The coins of Turkey, ſtruck at Conſtantinople, are as follow:

Of gold: the ſultanin, or ſequin foundouckly, of 4 piaſtres, and which is current for 5; the ſequin zeramabouc, or zermahboub, of 3 piaſtres; the half zermahboub, or niſbie, of 1 piaſtre 20 paras; the roubbie of 1 piaſtre. The value of theſe coins is excluſive of a variable agio.

Of ſilver: the allmichlec of 60 paras; the grouch, or piaſtre, of 40 paras; the zolotta of 30 paras; the roubb of 10 paras; and the para.

The coinage in Turkey has experienced repeated alterations, both in reſpect to the weight and to the ſtandard of the ſeveral coins.

In 1780, Abdoul-Hamet ordered that the weight of the *chiſe*, or purſe, ſhould be 2812½ drachms; and as the purſe conſiſts of 500 piaſtres of the purity of 50 carats each, the piaſtre weighs 5⅝ drachms.

100 zermahboubs, 200 niſbies, or 300 roubbies, ſhould weigh 82½ drachms, of the purity of 19¼ carats.

The *cheky*, or pound, for weighing precious metals, conſiſts of 100 drachms, 1600 carats, or 6400 grains.

In the aſſaying of gold, the unit of reference is divided into 24 carats, the carat into 4 grains; and in the aſſaying of ſilver, into 100 carats, the carat into 4 grains.

The cantaar, commercial weight, is divided into 7½ batmans, 44 okes, 100 rotolos, 176 yuſdromes, or chekis; and the cheky into 66⅔ miſcals, or 100 drachms.

A kilò, or kiſloz of wheat, weighs about 22 okes; and 4 kiſloz make 1 fortin.

The meter and the alme are uſed for meaſuring liquids.

Cloths are meaſured by the great pike; and cotton goods by the pike, or pik belledy.

VALENCIA.

In the titular kingdom of Valencia, in Spain, accounts are kept in *libras*, each libra conſiſting of 20 ſueldos, and each ſueldo of 12 dineros; or otherwiſe in *reales de plata nueva*, or reals of new plate, of 24 dineros each.

The libra of Valencia is equal to the peſo de cambio, or dollar of exchange.

The real of new plate, 10 of which compoſe the libra, is worth 2 ſueldos, or 24 dineros of Valencia, and is equal to $12\frac{4}{5}$ quartos, or $51\frac{1}{5}$ maravedis of vellon.

The real of old plate, 8 of which compoſe the libra, is worth $2\frac{1}{2}$ ſueldos, or 30 dineros of Valencia.

The *real de plata Valenciana*, $13\frac{1}{3}$ of which compoſe the libra, is worth $1\frac{1}{2}$ ſueldo, or 18 dineros of Valencia, and is equal to $9\frac{3}{5}$ quartos, or $38\frac{2}{5}$ maravedis of vellon.

The value of the Spaniſh coins at Valencia is as follows:

The *doblon de á 8 eſcudos*, or doubloon, is $21\frac{1}{4}$ libras, and the other *doblones* in the ſame proportion.

The *peſo duro*, or hard dollar, 1 libra $6\frac{9}{16}$ ſueldos.

The real of vellon $1\frac{21}{64}$ ſueldo, or $15\frac{15}{16}$ dineros.

The piſtole of exchange 4 libras.

The ducat of exchange 1 libra $7\frac{59}{68}$ ſueldos.

The proportion between theſe monies is as follows:

272 ducats of exchange	375 libras of Valencia
136 ditto	1875 reals of new plate
32 hard dollars	425 ditto
4 reals of old plate .	5 ditto.

The marc, for weighing gold and ſilver, is ſubdivided into 8 onzas, 32 quartos, 128 adarmes, or 4608 grains.

31 marcs of Valencia make 32 marcs of Caſtille.

The quintal *peſo ſutil* is compoſed of 4 arrobas, or 120 pounds; the arroba of 30 pounds; and the pound, or *libra penſil,* of 12 ounces. This pound is uſed for weighing bread, ſugar, tobacco, and groceries.

The arroba of flour conſiſts of 32 pounds of 12 ounces each.

The pound of freſh fiſh is 16 ounces, of ſalt fiſh 18, and of meat 36.

The quintal *peſo grueſo* is compoſed of 4 arrobas, or 144 pounds; the arroba of 36 pounds; and the pound of 12 ounces. This quintal is generally uſed at Valencia.

31 ounces of Valencia make 32 ounces of Caſtille.

The cahiz, corn meaſure, contains 12 barchillas, or 48 celemines, and the celemin is divided into 4 quarterones.

13 cahizes of Valencia make 48 fanegas of Caſtille.

A cantaro, liquid meaſure, is 4 azumbres, and weighs 36 pounds of 12 ounces each.

100 azumbres of Valencia make 164 azumbres of Caſtille.

The vara of Valencia conſiſts of 3 feet, or 4 palmos; and the palmo of 4 quartos, or 12 dedos.

12 varas of Valencia make 13 varas of Caſtille.

The yugada, land meaſure, is 6 cahizadas, the cahizada is 6 fanegadas, and the fanegada 200 brazas quadradas.

The cuerda is 20 brazas, or 45 varas, and the braza 9 palmos.

100 cahizadas of Valencia make 137$\frac{1}{9}$ fanegadas of Caſtille.

VENICE.

Accounts are kept at Venice either in lire, each lira conſiſting of 20 ſoldi, and each ſoldo of 12 denari di lira; or in ducati, each ducato being divided into 24 groſſi, and each groſſo into 12 denari di ducato, or groſſeti.

The ducato is $6\frac{1}{5}$ lire, 24 groſſi, 124 ſoldi, or marchetti, 288 groſſeti, or 1488 denari di lira.

5 ducati make 31 lire
31 lire . . . . . . 120 groſſi
6 groſſi . . . . . 31 marchetti.

Theſe monies have the ſeveral denominations of banco valuta, corrente valuta, and moneta corrente piccola.

The *banco valuta*, or bank value, is 20 per cent better than the current value.

The *corrente valuta* was the current value of the Venetian coins between the years 1686 and 1750. The doppia was then worth 29 lire, the zecchino 17, the ſcudo della croce $9\frac{3}{5}$, the ducatone or giuſtina $8\frac{1}{2}$, and the ducato effettivo $6\frac{1}{5}$.

The *moneta corrente piccola*, or ſmall currency, is the effective currency. Before the year 1750, an agio of 20 per cent was added to the ducati di banco, to bring them into ducati corrente valuta; and then a *ſopra agio* of 29 per cent was added to the latter, to bring them into ducati corrente piccoli. In the year 1750, the Government fixed the value of the bank ducat at 9 lire 12 ſoldi corrente piccoli, by which the difference between bank value and ſmall currency became $54\frac{26}{31}$ per cent, or $54\frac{5}{6}$, as it is reckoned in buſineſs.

31 ducati di banco make 48 ducati corrente piccoli
31 lire ditto .... 48 lire ditto.

The Bank of Venice keeps its accounts in lire groſſe, each lira groſſa conſiſting of 20 ſoldi groſſi, and each ſoldo groſſo of 12 denari groſſi. The lira groſſa is 10 ducati, or 62 lire di banco.

The coins of the Republic of Venice are as follow:

Of gold: the doppia of 37 lire 10 ſoldi; the zecchino, or ſequin, of 22 lire.

Of ſilver: the ſcudo veneto, or della croce, of 12 lire 8 ſoldi; the half and quarter ſcudo of proportionate value; the ducatone, or giuſtina, of 11 lire; the ducato effettivo of 8 lire; the half and quarter ducato of proportionate value.

Of ſilver and copper: the oſello of 3 lire 18 ſoldi; the lirazza of 1½ lira; the lira; pieces of 15, 10, and 5 ſoldi.

Of copper: the ſoldo and the ½ ſoldo, or bagattino.

The value of theſe coins is in moneta corrente piccola, but it is ſubject to an agio which varies according to circumſtances. The agio on the ſequins, in the month of February 1805, was at 37 per cent.

The marc, for weighing precious metals, conſiſts of 8 oncie, 32 quarti, 1152 carati, or 4608 grani.

In the aſſaying of gold and ſilver, the unit of reference is divided into 1152 carati.

Gold and ſilver in bars are ſold by the ounce fine, for ſo many lire correnti piccole.

The coinage at Venice is regulated as follows:

A marc of fine gold is coined into 68¼ zecchini.

The ſame marc, according to Kruſe, Ricard, and Marien, was coined into 35½ doppie, which, however, is neceſſarily erroneous in reſpect to the comparative current value of the doppia and of the zecchino.

The ſcudo della croce, or Venetian *dollar*, weighs $1\frac{1}{16}$ ounce of the purity of 1056 carati, or $\frac{11}{12}$ fine.

The ducatone, or ducatoon, weighs 3 quarti $27\frac{1}{2}$ carati of the ſame purity as the ſcudo.

The ducato effettivo, or effective ducat, weighs 3 quarti $1\frac{3}{4}$ carato of the purity of 952 carati, or 9 ounces 18 pennyweights.

The apothecaries make uſe of the ſame weight as that which is in general common to Germany, and which is referred to under the head of Hamburgh.

Two weights are uſed at Venice: the peſo groſſo, or great weight; and the peſo ſottile, or ſmall weight.

100 pounds peſo groſſo make 158 pounds peſo ſottile.

The carica is compoſed of 4 quintals, and the quintal of 100 pounds ſmall weight.

The pound ſmall weight conſiſts of 12 ounces, 72 ſaggi, or 1728 carati.

A ſtaro, or ſtajo of wheat, is 4 quarti, and weighs about 132 pounds great weight.

A migliajo of oil is 40 miri.

The amphora, liquid meaſure, conſiſts of 2 bigoncie, 4 maſtelli, 8 quartari, 32 ſecchie, or 512 engiſtari.

The long meaſure is the braccio.

16 brachi cloth meaſure make 17 brachi ſilk ſtuffs meaſure.

N. B. The preceding deſcription is excluſive of the alterations which may have taken place ſince the fall of the Republic of Venice.

VERONA.

Accounts are kept in this city of Italy in lire, each lira conſiſting of 20 ſoldi, and each ſoldo of 12 denari moneta corrente piccola of Venice.

Two weights are uſed at Verona, the peſo groſſo and the peſo ſottile; the former of which is 49½ per cent heavier than the latter.

A minella of wheat weighs about 60 pounds Venetian great weight.

A brenta of wine contains 8 baſſi.

A migliajo of oil meaſures 40 miri, and weighs 1738 pounds peſo ſottile of Verona.

The ſame migliajo contains 8 brente 11 baſſi, or 139 baſſi; wherefore the miro is 3½ baſſi.

The braccio of Verona is the ſame as that uſed at Venice for ſilk ſtuffs.

VIENNA.

In this city, the capital of Auſtria, accounts are kept in guldens, each gulden conſiſting of 60 kreutzers, or cruitzers, and each kreutzer of 4 pfenings.

The ſpecie reichſthaler is 1⅓ thaler, 2 guldens, or 120 kreutzers.

The current thaler, or rixdollar, is 1½ gulden, or 90 kreutzers.

The gulden is divided into 8 ſchillings, 20 groſchen, 60 kreutzers, 80 grœſchels, 240 pfenings, or 480 hellers.

The coins of Auſtria are as follow:

Of gold: the double ſouverain of 12⅔ guldens, and the ſouverain of 6⅓; the Imperial ducat of 4 guldens 30 kreutzers.

Of ſilver: the ſpecie reichſthaler of 2 guldens; and the gulden of 60 kreutzers.

Of ſilver and copper: pieces of 20, 17, 10, 7, 3, and $1\frac{1}{2}$ kreutzer.

Of copper: the kreutzer, the grœſchel, the half kreutzer, and the pfening.

The pieces of ſilver and copper are generally reckoned by quantities denominated *wurſe*.

12 wurſe of 17 kreutzer-pieces make 17 guldens
12 wurſe of 7 ditto . . . . 7 ditto.

The marc, for weighing gold and ſilver, conſiſts of 16 loths, 64 quintels, or 256 pfenings.

In the aſſaying of gold, the marc is divided into 24 carats, the carat into 12 grains; and in the aſſaying of ſilver, into 16 loths; the loth into 18 pfenings.

The above mentioned Auſtrian coins are of the coinage of 1753, and are denominated convention-money, to diſtinguiſh them from former coins as regulated by the conſtitution of the Empire.

Their weight and ſtandard are as follow:

A marc of gold, Vienna weight, of the purity of 23 carats 8 grains, is coined into $80\frac{2}{5}$ ducats; and as 5 marcs of Vienna make 6 marcs of Cologne, each ducat correſponds in weight with the ducat of Hamburgh.

10 reichſthalers, 20 guldens, or 40 half guldens, are ſtruck from a marc of ſilver of the purity of $13\frac{1}{3}$ loths.

42 pieces of 20 kreutzers from a marc $9\frac{1}{3}$ loths fine
46 ditto of 17 ditto . . . . ditto . . . . $8\frac{1}{3}$ ditto
72 ditto of 10 ditto . . . . ditto . . . . 8 ditto
$86\frac{1}{2}$ ditto of 7 ditto . . . . ditto . . . . $6\frac{13}{18}$ ditto.

The ſaum, commercial weight, is compoſed of 275 pounds, the centner of 100, and the ſtein of 20.

The pfund, or pound, is divided into 2 marcs, or 4 viertings.

A muth of corn conſiſts of 30 metzen, 120 viertels, or 240 achtels.

The fuder, or tun, liquid meaſure, contains 32 eimers, 128 viertels, 1280 maas or achtrings, 2240 kœpfen, or 5376 ſeidels.

The dreyling is only 30 eimers.

The klafter, or fathom, is 3 ells, or 6 feet of Vienna.

The joch, land meaſure, is 1600 ſquare klafters.

ULM.

In this city of the Circle of Suabia, in Germany, accounts are kept in guldens, each gulden conſiſting of 60 kreutzers, and each kreutzer of 4 pfenings, or 8 hellers.

The thaler is 1½ gulden, 22½ batzen, 30 groſchen, 90 kreutzers, 360 pfenings, or 720 hellers.

The price of wine is regulated by guldens conſiſting of 35 ſchillings each, the ſchilling being divided into 6 pfenings, or 12 hellers. The batzen is likewiſe reckoned 14 pfenings, or 28 hellers.

The other coins are referred to under the head of Augſburgh.

The centner is compoſed of 100 pounds.

The immi, corn meaſure, contains 4 mittlen, 24 metzen, or 96 viertelein.

A fuder of wine meaſures 12 eimers.

The ruthe, land meaſure, is 12 feet, or 144 inches, and the inch is 12 ſcrupels.

Cloth is meaſured by the elle.

UNITED STATES OF AMERICA.

Accounts are kept in dollars, each dollar conſiſting of 100 cents; or otherwiſe in pounds currency, each pound conſiſting of 20 ſhillings, and each ſhilling of 12 pence currency.

The coins of the United States, by the ſtatutes of the 8th Auguſt 1786, and 6th July 1787, were eſtabliſhed as follow:

Of gold: the eagle of the purity of 22 carats, weighing 268,656 grains troy-weight, or 246,268 grains pure gold, and worth 10 dollars; the half and quarter eagle in the ſame proportion.

Of ſilver: the dollar of the purity of 11 ounces, weighing 409,79 grains troy-weight, or 375,64 grains pure ſilver, and worth 100 cents; the half and quarter dollar in the ſame proportion; as well as the diſme, or a $\frac{1}{10}$th part of a dollar.

Of copper: 100 cents, or 200 half cents, to weigh $2\frac{1}{4}$ pounds avoirdupois of copper.

The proportion between gold and ſilver is as 1 to $15\frac{1}{4}$.

The weights and meaſures are the ſame as thoſe deſcribed under the head of England.

WIRTEMBURG.

In this Electorate of Germany, accounts are kept in guldens, each gulden conſiſting of 28 ſchillings, and each ſchilling of 12 pfenings currency.

The thaler is $1\frac{1}{2}$ gulden, $2\frac{1}{2}$ pfunds, $22\frac{1}{2}$ batzes, 42 ſchillings, 90 kreutzers, or 252 pfenings.

The coins of gold are the carolin, the ducat, and the reichs gulden; of ſilver, the reichſthaler and the gulden.

A ſcheffel of corn meaſures 8 ſimri, 32 vierlings or unzen, or 256 achtels.

A fuder of wine is 6 ahms, 96 immi or yunen, 960 maas, or 3840 ſchoppen.

Cloth is meaſured by the ell.

WISMAR.

In this city of the Dutchy of Mecklenburg, accounts are kept in thalers of 48 ſchillings, each ſchilling of 12 pfenings.

The thaler is 2 guldens, 3 marken, 24 groſchen, 48 ſchillings, 192 wittens, or 576 pfenings.

The ſchifpfund conſiſts of 20 liſpfunds, or 320 pounds.

A ſchifpfund of iron and lead is 280 pounds; a ſtein of flax 20, and of wool and feathers 10.

The pound is 32 loths, or 128 quintins.

The laſt of Wiſmar is 8 drœmts, or 96 ſcheffels.

The ell, cloth meaſure, is 2 feet.

ZELL.

In this city of the Dutchy of Lunenburg, in Germany, accounts are kept in thalers, each conſiſting of 36 marien groſchen, and the marien groſchen of 8 pfenings.

The other coins are referred to under the head of Hanover.

The ſchwer pfund weighs 320 pounds; the ſchifpfund 280; the centner 112; the ſtein of wool 28; the liſpfund and the ſtein of flax 14.

A laſt of corn is $2\frac{1}{2}$ wiſpels, 10 ſcheffels, 100 himtens, or 400 ſpints.

The ſtubgen, liquid meaſure, is compoſed of 4 quartiers, or 16 nœſſels.

The klafter, or fathom, is 3 ells, or 6 feet of Zell.

ZURIC.

In this city of Switzerland, accounts are kept in livres, each livre conſiſting of 20 ſols, and each ſol of 12 deniers; or otherwiſe in guldens of 60 kreutzers, the kreutzer of 8 hellers.

The current thaler, or rixdollar, is $1\frac{1}{2}$ reichs gulden, $1\frac{4}{5}$ gulden of Zuric, 3 livres, $28\frac{4}{5}$ batzes, 72 eſcalins, 108 kreutzers, 432 angſters, or 864 hellers.

3 guldens make 5 livres.

Theſe monies are divided into exchange money and current money.

9 pieces exchange money make 10 pieces current money.

The coins are, the ducat of 4 guldens 18 kreutzers; the thaler; the batze; pieces of 1, $\frac{1}{2}$, and $\frac{1}{4}$ eſcalin; and pieces of 2 hellers.

A louis d'or of France, coined ſince 1785, is worth 16 Swiſs livres, and a French crown 4.

The marc, for weighing gold and ſilver, weighs 8 ounces, 16 loths, 64 quintilins, 256 fenins, or 4352 as: 2 marcs compoſe the pound ſmall weight, which is uſed for weighing ſilks.

The pound great weight is 18 ounces, or 36 loths.

8 pounds great weight make 9 pounds ſmall weight.

The mutte, corn meaſure, contains 4 viertels, 16 vierlings, 32 immis, or 64 mœſlis.

The malter, fruit meaſure, is 16 viertels, 64 vierlings, or 256 mœſlis.

A maas of ſalt contains 4 viertels.

The ſaum, liquid meaſure, is 1½ eimer, 6 viertels, 48 kopf, 96 maas, 192 quartli, or 384 ſtotſen.

The ell, cloth meaſure, is 2 feet of Zuric.

The ruthe, land meaſure, is 10 feet, and the foot 10 inches.

The juchart is 360 ſquare ruthes.

TABLES
OF
MONIES, WEIGHTS,
AND
MEASURES.

TABLES OF PROPORTION

Of the Monies, Weights, and Meaſures of Foreign Nations, reſpectively with thoſe of England.

IN order to the attainment of a juſt compariſon of foreign monies with thoſe of England, the following tables are ſubjoined.

The firſt table contains the denominations of the principal foreign monies of account, and their intrinſic value in Engliſh money, calculated upon the exiſting proportion between gold and ſilver in the reſpective countries.

The ſecond table ſhews the names of the principal foreign coins in gold, their weight, their fineneſs, their pure contents, and the intrinſic value of each in relation to the gold coins of Great Britain.

The third table relates to ſilver coins, upon ſimilar principles to thoſe of the ſecond.

The compariſon of the weights and meaſures of foreign nations with thoſe of England is eſtabliſhed by the following tables.

The fourth table beſpeaks the names of the weights uſed for precious metals, the quantity which each contains in grains troy-weight, and the relation of the ſeveral foreign weights to 100 pounds troy-weight.

The fifth table denotes the names of the weights uſed in the ſale of merchandize, the quantity which each contains in grains troy-weight, and the relation of foreign weights to 100 and to 112 pounds avoirdupois-weight.

The ſixth table relates to the meaſures uſed in the ſale of corn, to the number of Engliſh cubic inches of the internal meaſurement of each, and to the relation of foreign meaſures to 10 quarters Wincheſter meaſure.

The ſeventh table compriſes the meaſures for liquids, the quantity of Engliſh cubic inches which each contains internally, and the relation of foreign meaſures to 100 gallons Engliſh.

The eighth table relates to cloth meaſures, to the length of each in lines, and to the relation of foreign meaſures to 100 yards and to 100 ells.

The ninth table is deſcriptive of meaſures of length for meaſuring maſts, timber, and other ſolid bodies, of the number of lines contained in each, and of the proportion between foreign meaſures of a ſimilar deſcription and 100 feet Engliſh.

The tenth table refers to land meaſures, to the quantity of Engliſh ſquare feet which each contains, and to the proportion between foreign meaſures of this deſcription and 100 acres.

The eleventh and laſt table is founded upon itinerary meaſures, the length of each in feet, and the proportion between the meaſures ſeverally adopted in different countries and a degree of the equator.

Independently of the facility which will be afforded by theſe tables in the compariſon of the monies, weights, and meaſures of foreign nations with thoſe of England, it will not be difficult to find the relation of the monies, weights, and meaſures of foreign countries, in reſpect to each other, by the guidance of the explanations at foot of each of the tables in queſtion.

It will be obſerved, that in order to avoid the multiplicity of the denominators of fractions, and to give to the ſeveral calculations a greater degree of exactitude, the unit has conſtantly been divided, in the following tables, into 100 parts. The table which concludes this work will ſhew the relation of decimal fractions to vulgar fractions.

TABLE THE FIRST,

Which ſhews the intrinſic Value of the Monies of Account of foreign Nations expreſſed in Pence Sterling.

MONIES OF ACCOUNT.

		Pence	100
Aix la Chapelle,	the ſpecie rixdollar	42,	75
	the current rixdollar	32,	25
Amſterdam,	the pound Flemiſh banco	132,	48
	the florin banco	22,	08
	the pound Flemiſh current	126,	36
	the florin current	21,	06
Arragon,	the libra jaqueſa	47,	80
Augſburgh,	the gulden exchange money	32,	51
	the gulden currency	25,	60
	the gulden white money	21,	33
Barcelona,	the libra catalana	27,	32
Baſil,	the rixdollar of exchange	48,	25
	the current rixdollar	43,	40
	the current livre	14,	46
Bengal,	the current rupee	21,	
Bergamo,	the lira	5,	18
Berlin,	the rixdollar gold currency	39,	66
	the rixdollar ſilver currency	35,	97
	the pound banco	48,	75
Bern,	the current livre	14,	67
Bologna,	the ſcudo di cambio	48,	09
	the lira di cambio	11,	31
	the current livre	11,	05
Bolzano,	the gulden exchange money	35,	
	the gulden current money	25,	66
Bombay,	the current rupee	23,	63
Bremen,	the rix dollar	38,	40

MONIES OF ACCOUNT.

		Pence	100
Breſlaw,	the rixdollar gold currency	39,	66
	the rixdollar ſilver currency	35,	97
	the pound banco	48,	75
Brunſwick,	the current thaler	38,	40
Buſſorah,	the mamudi	5,	50
Canary Iſlands,	the current real	3,	82
Caſſel,	the thaler	38,	40
China,	the tale	80,	
Cologne,	the ſpecie rixdollar	31,	71
	the current rixdollar	30,	92
Copenhagen,	the ſpecie reichſthaler	55,	85
	the current reichſthaler	45,	46
Curaçoa,	the dollar	43,	09
Dantzic,	the florin	9,	14
Dublin,	the pound Iriſh	221,	54.
Elſinore,	the ſpecie rixdollar	34,	75
	the crown rixdollar	32,	18
	the current rixdollar	30,	92
England,	the pound ſterling	240,	
Flanders,	the florin of exchange	20,	25
	the current florin	17,	37
Florence,	the ſcudo d'oro	62,	45
	the ducato	58,	29
	the pezza of 8 reals	47,	88
	the lira moneta buona	8,	32
France,	the livre tournois	9,	49
	the franc	9,	61
Francfort,	the thaler	38,	40
	the gulden	25,	60
Geneva,	the current crown	49,	20
	the current livre	16,	40
	the florin	4,	68

MONIES OF ACCOUNT.

		Pence	100
Genoa,	the ſcudo d'oro marche	89,	50
	the ſcudo d'argento	73,	13
	the pezza fuori di banco	48,	12
	the ſcudo di cambio	38,	50
	the lira fuori di banco	8,	37
Germany,	the reichſthaler conſtitution money	56,	84
	the thaler ditto	42,	63
	the gulden ditto	28,	42
	the reichſthaler convention money	51,	20
	the thaler ditto	38,	40
	the gulden ditto	25,	60
Hamburgh,	the pound Flemiſh banco	138,	37
	the rixdollar banco	55,	35
	the marc banco	18,	45
	the rixdollar currency	45,	
	the marc currency	15,	
Hanover,	the current thaler	42,	63
Konigſberg,	the gulden	12,	17
Leghorn,	the pezza of 8 reals	47,	88
	the lira moneta buona	8,	32
	the lira moneta lunga	7,	97
Leipſic,	the current thaler	38,	40
Liege,	the gulden	12,	96
Lubec,	the reichſthaler	45,	21
	the marc	15,	07
Lucca,	the ſcudo d'oro	56,	32
	the lira	7,	51
Madras,	the pagoda of 36 fanams	94,	75
	the rupee of 10 fanams	26,	32

MONIES OF ACCOUNT.

		Pence	100
Malta,	the ſilver crown	40,	26
	the copper crown	26,	84
Martinique,	the livre currency	7,	12
Mexico,	the dollar	52,	60
Milan,	the ſcudo imperiale	64,	14
	the current ſcudo	45,	33
	the lira currency	7,	88
Modena,	the lira	3,	81
Morocco,	the ducat	105,	
Munich,	the current thaler	32,	04
	the current gulden	21,	36
Naples,	the ducato di regno	42,	50
Navarre,	the ducado of $10\frac{8}{9}$ reals	53,	95
	the libra of 60 maravedis	8,	25
	the real of 36 ditto	4,	95
Nuremberg,	the current thaler	38,	40
	the thaler gold money	38,	95
	the thaler white money	31,	97
Pegu,	the ſilver tical	33,	70
Perſia,	the toman	289,	65
Poland,	the florin of Great Poland	7,	10
	the florin of Little Poland	14,	20
Pondicherry,	the pagoda	93,	50
	the rupee	24,	20
Portugal,	the milreis	67,	50
Prague,	the current gulden	25,	60
Ratiſbon,	the gulden white money	25,	60
Riga,	the albertus rixdollar	53,	29
Rome,	the ſcudo di ſtampa d'oro	80,	92
	the ſcudo moneta	53,	16

MONIES OF ACCOUNT.

		Pence	100
Roſtock,	the thaler	45,	20
	the zweydrittel	30,	13
Ruſſia,	the ruble	33,	58
St. Euſtatia,	the dollar	38,	25
St. Gall,	the gulden exchange money.	27,	90
	the gulden currency	24,	
Sardinia,	the lira	11,	50
Siam,	the gold tical	465,	50
	the ſilver tical	39,	25
Sicily,	the onza	130,	77
Smyrna,	the piaſtre	13,	50
Spain,	the piſtole of exchange	153,	
	the ducat of exchange	52,	73
	the dollar of exchange	38,	25
	the real of plate	4,	78
	the real of vellon	2,	54
Sweden,	the rikſdahler	55,	35
Surat,	the rupee	25,	
Surinam,	the florin	25,	25
Trieſte,	the gulden of 60 kreitzers	25,	60
	the florin of 5 lire	24,	20
Turin,	the ſcudo of 6 lire	69,	84
	the lira	11,	64
Turkey,	the piaſtre	13,	50
United States of America,	the dollar *at par*	54,	
Valencia,	the libra of 20 ſueldos	38,	25
Venice,	the lira piccoli *incluſive of the agio* on the zecchins	5,	12
Vienna,	the current thaler	38,	40
	the current gulden	25,	60

MONIES OF ACCOUNT.

		Pence	100
Zante,………	the real of 10 lire…………	41,	15
Zurich,………	the gulden exchange money.	27,	50
	the gulden currency………	25,	

The following example will ſhew in what manner the relation between the monies of account of any two given countries may be aſcertained.

EXAMPLE.

Let it be required to expreſs, in pence Iriſh, the value of a marc banco of Hamburgh.

The marc being worth 18,45 pence ſterling, and the pound Iriſh 221,54, according to the table prefixed, I ſtate the following equation:

1 marc banco = x
1 marc banco = 18,45 pence ſterling
221,54 pence ſterling = 1 pound Iriſh
1 pound Iriſh = 240 pence Iriſh

Reſult 19,99 pence Iriſh.

TABLE THE SECOND,

Which ſhews the Weight, Fineneſs, and pure Contents of the principal Gold Coins of foreign Nations, as well as their intrinſic Value, expreſſed in Engliſh Money.

GOLD COINS.

		Weight	Fineneſs		Pure contents	Value	
		Grs. 100	Car.	grs.	Grs. 100	s.	d. 100
Bavaria,	the carl	150,32	18	$2\frac{5}{6}$	117,18	20	8,87
	the max	100,21	18	$2\frac{2}{3}$	77,94	13	9,54
Bengal,	the gold mohur	176,50	23	3	174,66	30	10,95
Brunſwick,	the carl	102,30	21	3	92,76	16	5,02
Denmark,	the ducat of 12 marcs	48,21	21	$0\frac{2}{3}$	42,52	7	6,30
England,	the guinea	129,44	22		118,65	21	
	the half guinea	64,72	22		59,33	10	6,
	the 7*s* piece	43,13	22		39,55	7	
Flanders,	the double ſouverain	171,50	22		157,20	27	9,79
	the ſouverain	85,75	22		78,60	13	10,89
France,	the louis of 1726	122,90	21	$2\frac{2}{3}$	110,95	19	7,65
	the louis of 1785	117,83	21	$2\frac{2}{3}$	106,37	18	9,93
	the 40 franc piece	199,25	21	$2\frac{2}{5}$	179,32	31	8,85
	the 20 franc piece	99,62	21	$2\frac{2}{5}$	89,66	15	10,42
Geneva,	the piſtole of 1752	87,13	22		79,87	14	1,63
Genoa,	the zecchino	53,80	23	$3\frac{1}{2}$	53,52	9	5,67
Germany,	the ducat	53,85	23	$2\frac{2}{3}$	53,10	9	4,78
Hamburgh,	the ducat	53,85	23	2	52,73	9	4,
Hanover,	the georges	103,03	21	3	93,57	16	6,31
	the gold gulden	50,06	19	$0\frac{1}{3}$	39,80	7	0,54
Holland,	the ryder	153,54	22		140,74	24	10,92
	the ducat	53,85	23	2	52,73	9	4,
Hungary,	the ducat of Kremnitz	53,85	23	3	53,29	9	5,18
Madras,	the ſtar pagoda	52,75	19	2	42,86	7	7,03
Naples,	the onza	68,10	21		59,59	10	6,56
Piedmont,	the zecchino	54,	23	$3\frac{1}{2}$	53.72	9	6,09
	the piſtole of 1741	110,10	21	3	99,78	17	7,92
	the doppia of 1755	148,50	21	3	134,58	23	9,83
Portugal,	the joaneſe	221,87	22		203,39	36	
	the moidore	166,	21	$3\frac{3}{4}$	151,30	26	9,35
Pruſſia,	the frederick	103,03	21	3	93,37	16	6,31
Rome,	the zecchino	53,55	23	2	52,43	9	3,36

GOLD COINS.

	Weight	Fineneſs		Pure contents	Value	
	Grs. 100	Car.	grs.	Grs. 100	s.	d. 100
Ruſſia, ... the imperial of 1755	255,53	22		234,23	41	5,49
the imperial of 1763	202,18	22		185,33	32	9,62
the imperial of 1801	202,18	23	$2\frac{1}{2}$	199,90	35	2,70
Saxony, ... the auguſt	102,	21	$2\frac{2}{3}$	92,08	16	3,57
Siam, ... the tical	281,88	19	$0\frac{1}{3}$	224,13	39	8,04
Sicily, ... the onza	67,94	21	3	61,57	10	10,77
Spain, ... the doubloon before 1772	416,65	21	$3\frac{3}{4}$	380,85	67	4,87
the doubloon of 1772	416,65	21	$2\frac{2}{3}$	376,14	66	6,88
the doubl. of 1785.	416,65	21	2	373,25	66	0,74
Sweden, . . . the adolphus	102,95	15	$1\frac{1}{3}$	65,77	11	7,70
Tuſcany, . . . the ruopono	161,33	23	$3\frac{2}{3}$	160,77	28	5,45
United States. the eagle	268,66	22		246,27	43	7,05
Venice, ... the zecchino	54,	23	$3\frac{1}{7}$	53,72	9	6,09
Wirtemberg, the carl	150,32	18	$2\frac{5}{6}$	117,18	20	8,87

In the firſt column of this table is ſhewn the weight of each foreign coin in grains troy-weight; in the ſecond column, the degree of fineneſs in carats and grains of a carat; in the third column, the contents of fine gold in grains troy-weight; and in the fourth, the intrinſic value expreſſed in ſhillings and pence ſterling.

The following example will be of guidance to aſcertain the value of a foreign coin in other money alſo foreign.

EXAMPLE.

It is required to expreſs the value of a louis d'or of France coined ſince 1785 in the money of Portugal.

As it is ſeen by the prefixed table that the louis of 24 livres tournois contains 106,37 grains of fine gold, and that the joaneſe of 6400 reis contains 203,39 grains of fine gold, I ſtate the following equation:

1 louis = x

1 louis = 106,37 grains

203,39 grains = 1 joaneſe

1 joaneſe = 6400 reis

Reſult 3347 reis.

TABLE THE THIRD,

Which ſhews the Weight, Fineneſs, and pure Contents of the principal Silver Coins of foreign Nations, as well as their intrinſic Value, expreſſed in Engliſh Money.

SILVER COINS.

		Weight	Fineneſs	Pure contents	Value
		Grs. 100	Oz. dwt.	Grs. 100	d. 100
Aix la Chapelle,	the raths-præſentger.....	95,68	7 1	56,21	7,85
Arabia,....	the larin.........	74,17	10 17½	56,84	7,93
Baſil,......	the reichſthaler...	436,89	10 10	382,28	53,38
Bengal,....	the ſicca rupee....	179,55	11 18½	178,43	24,92
Bern,......	the patagon......	417,63	10	348,	48,59
Bombay,...	the rupee........	178,31	11 15	174,60	24,38
Denmark,..	the rikſdahler.....	449,87	10 10	393,64	54,97
	the krohn	344,	8 1	230,77	32,23
England,...	the crown.......	464,52	11 2	429,68	60,00
	the ſhilling	92,90	11 2	85,94	12,
Flanders,...	the ducaton......	513,29	10 8¾	446,46	62,34
	the croon........	456,91	10 8⅓	395,71	55,26
	the patagon......	433,	10 10	378,88	52,91
France,....	the ecu of 1726...	452,50	10 18	411,03	57,40
	the 5 franc piece..	386,14	10 16	347,52	48,53
Geneva,....	the patagon......	416,87	10	347,38	48,51
Genoa,....	the genovina.....	593,10	11 9	565,93	79,03
	the St. Gianbatiſta.	321,66	11	294,85	41,17
	the giorgino......	91,25	10 6⅔	78,58	10,97
	the double madonina	140,19	10 1⅔	117,80	16,45
Germany,..	the reichſthaler conſtitution money.	450,97	10 13⅓	400,87	55,98
	the gulden ditto...	225,48	10 13⅓	200,43	27,99
	the reichſthaler convention money .	432,93	10	360,78	50,38
	the gulden ditto...	216,46	10	180,39	25,19
	the old zweydrittel			229,05	31,98
	the new zweydrittel			200,42	27,98
Hamburgh,.	the rixdollar banco	450,52	10 13⅓	400,47	55,92
	the marc banco...	150,17	10 13⅓	133,49	18,64
	the rixdollar lubs..	424,41	9	318,30	44,43
	the marc lubs	141,47	9	106,10	14,81

SILVER COINS.

		Weight	Fineneſs	Pure content	Value
		Grs. 10	Oz. dwt	Grs. 10	d. 100
Holland,	the ducatoon	503,50	11 5	472,0.	65,91
	the threeflorin piece	488,	11	447,3	62,46
	the rixdaler	433,17	10 10	379,03	52,93
	the leeuwendaler	422,	8 18	312,98	43.70
	the gold florin	307,	7 7	188,04	26.26
	the current florin	162,70	10 19	148,46	20,73
Madras,	the rupee	178,88	11 16½	176,28	24,61
Milan,	the philip	430,21	11 8⅓	409,30	57,15
Naples,	the ducat	336,	10 19	306,60	42,81
Piedmont,	the ducatoon	491,03	11 8⅓	467,17	65,23
	the ſcudo of 1733	459,88	10 19⅙	419,96	58,64
	the ſcudo of 1755	542,95	10 17½	492,05	68,71
Pondicherry,	the rupee	177,27	11 11	170,63	23,83
Poland,	the tympfe	89,75	6 3⅓	46,12	6,44
Portugal,	the cruzade	265,65	10 15½	238,54	33,31
Pruſſia,	the current rixdollar	343,42	9	257,57	35,97
Rome,	the ſcudo moneta	408,70	11	374,64	52,31
	the teſtono	130,54	11	119,67	16,71
	the papeta	81,59	11	74,79	10,44
Ruſſia,	the ruble of 1755	402,76	9 10	318,85	44,52
	the ruble of 1763	369,88	9	277,41	38,74
	the ruble of 1801	277,48	10 8	240,48	33,58
	the livonina of 1757	411,66	9 1¼	310,99	43,41
	the rixdollar albertus	433,17	10 10	379,03	52,93
Saxony,	the old reichſthaler	459,97	10 13⅓	400,87	55,98
	the new reichſthaler	432,93	10	360,78	50,38
	the zweydrittelſtucke	212,14	11 6⅔	200,35	27,98
Spain,	the hard dollar before 1772	416,40	10 18⅓	378,81	52,90
	the hard dollar ſince 1772	416,40	10 15	373,03	52,09
Sweden,	the reichſthaler of 1764	451,56	10 10⅚	396,69	55,39
	the ducatoon	484,	11 1¼	446,18	62,30
	the carolin	160,51	8 6⅔	111,47	15,56
	the ten oere ſilver piece	108,30	5 6⅔	48,13	6,72

SILVER COINS.

	Weight Grs. 100	Fineneſs Oz. dwt.	Pure contents Grs. 100	Value d. 100
Tuſcany,...the franceſcono...	422,75	11	387,52	54,11
the lanternina....	420,	11 1	386,75	54,
the livornina.....	402,	11 1	370,18	51,69
United States, the dollar......	409,79	11	375,64	52,45
Venice,....the ducat........	350,83	9 18	289,44	40,42
the ſcudo........	489,54	11	448,75	62,66
the giuſtina......	433,17	11	397,07	55,45

In the firſt column of this table is ſhewn the weight of each foreign coin in grains troy-weight; in the ſecond column, the degree of fineneſs in carats and grains of a carat; in the third column, the contents of fine ſilver in grains troy-weight; and in the fourth, the intrinſic value expreſſed in pence ſterling.

The following example will ſhew in what manner the value of a foreign coin in other money alſo foreign may be aſcertained.

EXAMPLE.

It is required to expreſs the value of a Spaniſh hard dollar in the money of France.

As it is ſeen by the prefixed table that the hard dollar contains 373,03 grains of fine ſilver, and that the piece of 5 francs contains 347,52 grains of fine ſilver, I ſtate the following equation:

1 hard dollar = x
1 hard dollar = 373,03 grains
347,52 grains = 5 franc piece
Reſult 5 francs 37 cents.

TABLE THE FOURTH,

Which ſhews the Quantity of Grains Troy-Weight contained by each of the Weights uſed in the Trade of precious Metals, and the Relation of foreign Weights to 100 Pounds Troy-weight.

TROY-WEIGHT.

Places	Weights	Contents of each weight Grains	Equivalence to 100 pounds Numb. 100
Amſterdam	marc	3798	151,66
Antwerp	marc	3798	151,66
Augſburgh	marc	3643	158,09
Baſil	marc	3612	159,46
Berlin	marc	3616	159,30
Bern	marc	3818	151,06
Bombay	tola	178¼	3231,25
Bonn	marc	3609	159,62
Botzen	marc	4330	133,04
Bremen	marc	3612	159,46
Breſlaw	marc	3016	199,99
Brunſwick	marc	3603	159,85
Bruſſels	marc	3798	151,66
Cairo	rotolo	6887	83,64
China	tale	579	994,81
Cologne	marc	3612	159,46
Conſtantinople	cheky	4926	116,93
Copenhagen	marc	3641	158,19
Coromandel	ſeer	4293	134,16
Cracow	marc	3069	187,68
Damaſcus	rotolo	34432	16,73
Dantzic	marc	3605½	159,75
Dreſden	marc	3605½	159,75
England	pound	5760	100,00
	ounce	480	1200,00
Florence	pound	5244	109,84
France	marc	3780	152,33
	kilogramme	15446	37,29
Francfort	marc	3612	159,46
Geneva	marc	3787¾	152,07
Genoa	pound	4897⅔	117,61
Hamburgh	marc	3608	159,64

TROY-WEIGHT.

Places	Weights	Contents of each weight — Grains	Equivalence to 100 pounds — Numb. 100
Hanover	marc	3608	159,64
Holland	marc	3798	151,66
Japan	tale	580⅝	992,02
Konigſberg	marc	3023	190,52
	idem Berlin weight	3616	159,30
Leghorn	pound	5244	109,84
Leipſic	marc	3606	159,75
Liege	marc	3800	151,58
Lubec	marc	3608	159,64
Magdeburg	marc	3607	159,68
Malabar	ſeer	4293	134,16
Manheim	marc	3611	159,49
Milan	marc	3631	158,63
Munich	marc	3612	159,46
Naples	pound	4954	116,27
Nuremberg	marc	3688	156,19
Pegu	tical	237¼	2427,80
Perſia	mitigal	71¾	8027,90
Piſa	pound	5237	110,00
Pondicherry	ſeer	4293	134,16
Portugal	marc	3542½	162,60
Prague	marc	3916	147,08
Ratiſbon	marc	3800	151,58
Riga	marc	3227	178,50
Rome	pound	5239	109,95
Ruſſia	pound	6314	91,23
Sienna	pound	5179	111,22
Spain	marc	3551	162,21
Sweden	marc	3252	177,12
Surat	tola	187½	3066,35
Tripoli	mitical	73¾	7810,16
Tunis	ounce	486½	1183,96
Turin	marc	3799	151,62
Venice	marc	3686	156,26
	ounce	460¾	1250,12
Vienna	marc	4333	132,93
Warſaw	marc	3114	184,97
Wilna	marc	3006	191,62
Wirtemburg	marc	3612	159,46
Zurich	marc	3615	159,34

The following examples will ſhew in what manner the proportion between the weights of any two given countries may be aſcertained.

It is required to reduce 100 marcs of Hamburgh into marcs of France.

The marc of Hamburgh weighing 3608 grains, and the marc of France 3780, according to the table prefixed, I ſtate the following equation :

100 marcs of Hamb. = x
1 marc of Hamburgh = 3608 grains
3780 grains = 1 marc of France
Reſult 95,45 marcs of France.

Reduce 100 marcs of France into marcs of Hamburgh.

100 marcs of France = x
1 marc of France = 3780 grains
3608 grains = 1 marc of Hamburgh
Reſult 104,76 marcs of Hamburgh.

TABLE THE FIFTH,

Which ſhews the Quantity of Grains Troy-weight contained by each of the Weights uſed in the Sale of Merchandize, and the Relation of foreign Weights to 100 *Pounds and* 112 *Pounds Avoirdupois-weight.*

AVOIRDUPOIS-WEIGHT.

Places	Weights	Contents of each weight Grains	Equiv. to 100 pounds Num. 100	Equiv. to 112 pounds Num. 100
Achem	catti	14675	47,70	53,42
Aix in France	pound	6310	110,94	124,25
Aix la Chapelle	pound	7235	96,75	108,26
Algiers	rotolo	8345	83,89	93,95
Aleppo	idem of 720 drams	35190	19,89	22,28
	idem of 700	34213	20,46	22,92
	idem of 680	33235	21,06	23,59
	idem of 600	29315	23,87	26,73
	idem of 400	19550	35,81	40,10
Alexandria	rotolo zauro	14579	48,01	54,77
	idem zaidino	9346	74,90	83,89
	idem forforo	6579	106,40	119,16
Alexandretta	mine	11663	60,02	67,22
Alicante	libra mayor	8004	87,45	97,95
	libra menor	5336	131,18	146,93
Altona	pound	7477	93,62	104,86
Amberg	pound	9257	75,62	84,70
Amſterdam	pound commercial weight	7625	91,80	102,82
	pound apothecary weight	5696	122,88	137,63
Ancona	pound	5183	135,05	151,26
Anſpach	pound	7868	88,97	99,64
Antwerp	pound	7261	96,40	107,97
Archangel	pound	6314	110,87	124,18
Arragon	libra penſil	5326	131,43	147,20
Augſburgh	pfund frohngewicht	7580	92,34	103,42
	pfund kramgewicht	7295	95,95	107,46
Avignon	pound	6084	115,05	128,85
Bamberg	pound	7494	93,41	104,62
Barcelona	pound	6214	112,65	126,16

AVOIRDUPOIS-WEIGHT.

Places	Weights	Contents of each weight Grains	Equiv. to 100 pounds Num. 100	Equiv. to 112 pounds Num. 100
Baſil	pound	7561	92,58	103,69
Batavia	catti	9450	74,08	82,96
Bautzen	pound	6690	104,63	117,18
Bayonne	livre	7561	92,58	103,69
Bayreuth	pound	7989	87,63	98,14
Beetleſakee	maund	11773	59,40	66,59
Bengal	factory maund		1,34	1,50
	bazar maund		1,22	1,36
Bergamo	pound peſo forte	12581	55,64	62,31
	pound light weight	5033	139,09	155,78
Bergen	pound	7716	90,72	101,60
Bergen op Zoom	pound	7343	95,33	106,77
Berlin	pound	7233	96,78	108,40
Bern	pound	8068	86,76	97,18
Bilboa	pound	7561	92,58	103,69
Bois-le-Duc	pound	7196	97,27	108,95
Bologna	pound	5590	125,21	140,24
Bolzano	pound	7733	90,52	101,38
Bombay	maund		2,63	2,95
Bordeaux	pound city weight	7637	91,66	102,66
	pound poids de marc	7561	92,58	103,69
Bremen	pound	7700	90,92	101,83
Breſlaw	pound	6256	111,90	125,33
Bruges	pound	7261	96,40	107,97
Brunſwick	pound	7207	97,13	108,79
Bruſſels	pound	7261	96,40	107,97
Buſſorah	maund ſeſſi		1,11	1,24
	maund à tary		3,51	3,93
Cadiz	pound	7102	98,57	110,40
Cairo	rotolo	6665	105,04	117,64
Calais	pound heavy weight	7870	88,95	99,62
	pound light weight	6501	107,67	120,59
Calicut	maund		3,33	3,73
Canary Iſlands	pound	7094	98,67	110,52

AVOIRDUPOIS-WEIGHT.

Places	Weights	Contents of each weight — Grains	Equiv. to 100 pounds. — Num. 100	Equiv. to 112 pounds — Num. 100
Canea	rotolo heavy weight	8127	86,13	96,47
	rotolo light weight	5277	132,64	148,56
Canton	catti	8640	81,	90,72
Carthagena	pound	7102	98,57	110,40
Caſſel	pound	4887	143,23	160,42
Caſtille	pound	7102	98,57	110,40
Cephalonia	pound	7384	94,80	106,18
Chambery	pound	6621	105,72	118,40
Civita Vecchia	pound	5267	132,90	148,85
Coburg	pound	7868	88,97	99,64
Cologne	pound	7225	96,89	108,52
Como	pound	4789	146,18	163,72
Conſtance	pound	7285	96,08	107,61
Conſtantinople	rotolo	8670	80,74	90,43
Copenhagen	pound	7716	90,72	101,60
Corfu	pound	7384	94,80	106,18
Coromandel	vis	23333	30,	33,59
Corſica	pound	5315	131,70	147,50
Corunna	pound	8877	78,85	88,31
Courtray	pound	6749	103,58	116,
Cracow	pound	6271	111,63	125,02
Cremona	pound	5060	138,34	154,94
Culmbach	pound	7989	87,63	98,14
Cyprus	rotolo	36710	19,07	21,36
Damaſcus	rotolo	27691	25,28	28,31
Dantzic	pound	6722	104,15	116,66
Denmark	pound	7716	90,72	101,60
Delft	pound	7625	91,80	102,82
Deventer	pound	7259	96,42	108,
Dieppe	pound	7630	91,75	102,76
Dixmude	pound	6639	105,43	118,09
Dordrecht	pound	7625	91,80	102,82
Dreſden	pound	7211	97,07	108,72
Dublin	pound	7000	100,	112,
Dunkirk	pound	6615	105,81	118,52
Elbing	pound	6558	106,74	119,55
Elſinore	pound	7716	90,72	101,60

AVOIRDUPOIS-WEIGHT.

Places	Weights	Contents of each weight — Grains	Equiv. to 100 pounds — Num. 100	Equiv. to 112 pounds — Num. 100
Embden	pound	7666	91,31	102,27
England	pound avoirdupois	7000	100,	112,
	pound apothecary weight.	5760	121,53	136,11
Erfurt	pound	7285	96,08	107,61
Ferrara	pound	5237	133,67	149,71
Ferrol	pound	8877	78,85	88,31
Fez	rotolo	7259	96,42	108,
Flenſburg	pound	7461	93,82	105,08
Florence	pound	5401	129,60	145,15
Forli	pound	5084	137,69	154,22
France	pound poids de marc	7561	92,58	103,69
	pound apothecary weight.	5568	123,51	138,33
	kilogramme	15446*	45,32	50,76
	hectogramme	1544 3/5	453,20	507,60
Francfort on the Maine	pound heavy weight	7841	89,28	100,
	pound light weight	7210	97,09	108,74
Francfort on the Oder	pound	7232	96,80	108,42
Freyberg	pound	7210	97,09	108,74
Fluſhing	pound	7189	97,37	109,06
Gaeta	pound	4553	153,75	172,20
Galicia	pound	8877	78,85	88,31
Gallipoli	rotolo	6978	100,31	112,35
Gand	pound	7261	96,40	107,97
Geneva	pound heavy weight	8502	82,34	92,22
	pound light weight	7085	98,70	110,66
Genoa	Cuſtom Houſe rotolo	8258	84,77	94,94
	rotolo peſo di caſſa	7506	93,25	104,45

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* The gramme, or the unit of French weights, is therefore equivalent to 15,446 grains troy-weight.

AVOIRDUPOIS-WEIGHT.

Places	Weights	Contents of each weight Grains	Equiv. to 100 pounds Num. 100	Equiv. to 112 pounds Num. 100
Genoa (continued)...	rotolo cantaro weight.....	7360	95,11	106,52
	pound peſo groſſo	4907	142,65	159,77
	pound peſo ſottile	4898	142,92	160,07
Germany	pound apothecary weight..	5527	126,64	141,84
Gibraltar...........	pound	7215	97,01	108,55
	pound Cadiz weight......	7102	98,57	110,40
Gottenburg	pound victualie weight.......	6563	106,66	119,46
	pound for weighing iron....	5250	133,33	149,33
Granada	pound heavy weight......	7707	90,82	101,72
	pound light weight......	6860	102,05	114,30
Groningen..........	pound	7552	92,69	103,81
Gueldres...........	pound	7205	97,15	108,81
Hamburgh	pound commercial weight..	7481	93,57	104,80
	pound Cologne weight......	7224	96,89	108,52
Hanover	pound	7494	93,40	104,61
Harburg	pound	7494	93,40	104,61
Harlem	pound	7625	91,80	102.82
Havre de Grace......	pound	8161	85,77	96,06
Hague..............	pound	7625	91,80	102,82
Heidelberg	pound	7788	89,88	100,67
Hildeſheim	pound	7207	97,13	108.79
Japan	catti	9100	76,92	86,15
Java................	catti	9247	75,70	84,79
Kiel	pound	7355	95,17	106,69
Kintzingen	pound	7868	88,97	99,64
Konigſberg	pound old weight	5869	119,27	133,58
	pound new weight.....	7233	96,78	108,50

AVOIRDUPOIS-WEIGHT.

Places	Weights	Content of each weight — Grains	Equiv. to 100 pounds — Num. 100	Equiv. to 112 pounds — Num. 100
Krems	pound	8743	80,37	89,67
Leghorn	pound	5296	132,17	148,03*
Leipſic	pound butchers' weight	7772	90,07	100,88
	pound commercial weight	7207	97,13	108,79
	pound miners' weight	6954	100,66	112,75
	pound for weighing ſteel	6718	104,20	116,70
Leyden	pound	7261	96,40	107,97
Liebau	pound	6378	109,76	122,92
Liege	pound	7331	95,48	106,94
Lindau	pound	7089	98,74	110,59
Lintz	pound	8743	80,07	89,67
Liſbon	pound	7085	98,80	110,66
Liſle	pound heavy weight	7164	97,72	109,44
	pound light weight	6615	105,81	118,52
London	pound avoirdupois	7000	100,	112,
Louvain	pound	7261	96,40	107,97
Lubec	pound	7461	93,82	105,08
Lucca	pound commercial weight	5745	121,84	136,45
	pound for weighing ſilk	5150	135,93	152,24
Lucern	pound	7707	90,82	101,72
Lunenburg	pound	7494	93,40	104,61
Lyons	pound for weighing ſilk	7088	98,77	110,62
	pound city weight	6615	105,81	118,52
Madeira	pound	6725	104,10	116,59
Madras	maund		4,	4,48
Madrid	pound	7102	98,57	110,40

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* According to the prices current received from Leghorn, the equivalent to 112 pounds is only 145.

AVOIRDUPOIS-WEIGHT.

Places	Weights	Contents of each weight Grains	Equiv. to 100 pounds Num. 100	Equiv. to 112 pounds Num. 100
Magdeburg	pound	7232	96,80	108,42
Mahon	pound	6865	101,97	114,21
Majorca	rotolo	6486	.07,92	120,87
Malabar	vis	23333	30,	33,59
Malacca	vis	9450	74,08	82,96
Malaga	pound	7102	98,57	110,40
Malta	rotolo	11901	58,82	65,88
Manheim	pound	7639	91,63	102,63
Mantua	pound	5083	137,71	154,24
Marſeilles	pound poids de table	6203	112,85	126,39
Maſulipatam	ſeer	4293	163,05	182,62
Mecca	rotolo	7144	97,98	109,74
Medina	rotolo	7144	97,98	109,74
Memel	pound	6378	109,76	122,92
Memmingen	pound	7903	88,57	99,20
Meſſina	pound of 12 ounces	4903	142,77	175,34
	rotolo of 30 ounces	12257	57,11	63,96
	rotolo of 33 ounces	13483	51,92	58,15
Middelburg	pound	7225	96,89	108,52
Milan	pound heavy weight	11807	59,29	66,40
	pound light weight	5060	138,34	154,94
Minorca	libra mayor	18480	37,88	42,43
	libra menor	6160	113,65	127,28
Mocha	maund	21000	33,33	37,33
Modena	pound	4971	140,82	157,71
Monaco	pound	5113	136,89	153,32
Montpellier	pound	6282	111;42	124,89
Morea	pound commercial weight	6168	113,19	127,10
	pound for weighing ſilk	7710	90,79	101,68
	oke	18463	37,92	42,47
Morocco	pound of Caſtille	7102	98,57	110,40

AVOIRDUPOIS-WEIGHT.

Places	Weights	Contents of each weight Grains	Equiv. to 100 pounds Num. 100	Equiv. to 112 pounds Num. 100
Morlaix	pound	7561	92,58	103,69
Muſcovy	pound	6314	110,87	124,18
Munich	pound	8657	80,86	90,57
Munſter	pound	7355	95,17	106,60
Namur	pound	7261	96,40	107,97
Nancy	pound	7561	92,58	103,69
Nantes	pound	7561	92,58	103,69
Naples	pound	4954	141,30	158,26
	rotolo	13761	50,87	56,97
Narva	pound	7225	96,89	108,52
Navarre	pound of Caſtille	7102	98,57	110,40
Naumburg	pound	7207	97,13	108,79
Negrepont	rotolo	8261	84,73	94,90
Neufchatel	pound	8029	87,18	97,64
Neuſtadt	pound	7868	88,97	99,64
Nice	pound	4786	146,25	163,80
Nimeguen	pound	7639	91,63	102,63
Nordlingen	pound	7566	92,52	103,62
Norway	pound	7716	90,72	101,60
Novi	pound	5113	136,89	153,32
Nuremberg	pound	7868	88,97	99,64
Oporto	pound Liſbon weight	7085	98,86	110,66
	pound according to Kruſe	6646	105,33	117,97
Oran	rotolo	7776	90,02	100,83
Orient	pound	7561	92,58	103,69
Ormus	ſeer	4676	149,70	167,67
Oſnaburg	pound	7625	91,80	102,82
Oſtend	pound	7261	96,40	107,97
Oudenard	pound	6758	103,58	116,
Oviedo	pound of Aſturias	10653	65,71	73,60
	pound of Caſtille	7102	98,57	110,40
Paderborn	pound	7355	95,17	106,60
Padua	pound	5157	135,75	152,04
Palermo	pound of 12 ounces	4903	142,77	175,34
	rotolo of 30 ounces	12257	57,11	63,96

AVOIRDUPOIS-WEIGHT.

Places	Weights	Contents of each weight Grains	Equiv. to 100 pounds Num. 100	Equiv. to 112 pounds Num. 100
Palermo (continued)	rotolo of 33 ounces	13483	51,92	58,15
Paris	pound poids de marc	7561	92,58	103,69
Parma	pound	5234	133,75	149,80
Paſſau	pound	7414	94,41	105,74
Patras	pound commercial weight	6168	113,49	127,10
	pound for weighing ſilk	7710	90,79	101,68
Pegu	vis	23333	30,	33,59
Pernau	pound	6431	108,85	121,91
Piedmont	pound	5749	121,77	136,39
Piſa	pound	5028	139,21	155,92
Placenza	pound	4980	140,56	157,43
Pondicherry	vis	22683	30,86	34,56
Portugal	pound	7085	98,80	110,66
Poſen	pound	6148	113,87	127,53
Prague	pound	7929	88,28	98,88
Preſburg	pound	8616	81,24	91,
Raguſa	pound	5607	124,84	139,82
Ratiſbon	pound	8777	79,75	89,32
Ravenna	pound	4623	151,41	169,58
Reggio	pound	5093	137,45	153,95
Revel	pound	6646	105,33	117,97
Rhodes	rotolo	36922	18,96	21,24
Riga	pound	6454	108,40	121,48
Rochelle	pound	7561	92,58	103,69
Rome	pound Roman.	5239	133,61	149,65
	pound public ſcale	5344	131,	146,71
Roſtock	pound	7888	88,75	99,40
Rotenburg	pound	7868	88,97	99,64
Rotterdam	pound heavy weight	7625	91,80	102,82
	pound light weight	7261	96,40	107,97
Rouen	pound poids de marc	7561	92,58	103,69

AVOIRDUPOIS-WEIGHT.

Places	Weights	Contents of each weight — Grains	Equiv. to 100 pounds — Num. 100	Equiv. to 112 pounds — Num. 100
Rouen (continued)...	pound poids de vicomté....	8015	87,34	97,82
Roveredo	pound	5257	133,15	149,13
Ruſſia	pound	6314	110,87	124,18
St. Ander	pound	7102	98,57	110,40
St. Croix	pound	7716	90,72	101,60
St. Euſtatia.........	pound	7625	91,80	102,82
St. Gall	pound heavy weight.....	9823	77,58	86,89
	pound light weight.....	7179	97,51	109,21
St. Lucar	pound	7102	98,57	110,40
St. Malo...........	pound	7561	92,58	103,69
St. Peterſburg.......	pound	6314	110,87	124,18
St. Sebaſtian........	pound	7524	93,04	104,20
Sallee	pound	7215	97,01	108,66
Saltzburg	pound	8643	81,	90,71
Saragoſſa...........	pound of 12 ounces	5326	131,43	147,20
Sardinia	pound	6188	113,12	126,69
Sayd	rotolo of Acre.	36776	19,04	21,32
	rotolo of Damaſcus.....	28755	24,34	27,27
Schafhauſen	pound	7094	98,68	110,52
Schweinſurt.........	pound	7868	88,97	99,64
Scio...............	rotolo	7647	91,54	102,52
Scotland	pound old weight.....	7616	91,91	102,94
	pound new weight.....	7000	100,	112,
Seville	pound	7102	98,57	110,40
Siam	catti	9030	77,52	86,82
Sicily	pound of 12 ounces.....	4903	142,77	175,34
	rotolo of 30 ounces.....	12257	57,11	63,96
	rotolo of 33 ounces.....	13483	51,92	58,15
Sienna.............	pound	6905	101,38	113,55

AVOIRDUPOIS-WEIGHT.

Places	Weights	Contents of each weight Grains	Equiv. to 100 pounds Num. 100	Equiv. to 112 pounds Num. 100
Smyrna	oke	19420	36,05	40,37
	rotolo	8739	80,10	89,71
Spain	pound of 16 ounces	7102	98,57	110,40
Stade	pound	7333	95,46	106,92
Stettin	pound	7232	96,80	108,42
Stralſund	pound	7461	93,82	105,08
Straſburg	pound heavy weight	7557	92,63	103,75
	pound light weight	7277	96,19	107,74
Sweden	pound victualie weight	6563	106,66	119,46
	pound miners' weight	5802	120,65	135,13
	pound cities weight	5526	126,68	141,88
	pound for weighing iron	5250	133,33	149,33
	pound apothecary weight	5501	127,26	142,53
Sumatra	catti	19684	35,56	39,83
Surat	ſeer	6556	106,78	119,60
Surinam	pound	7625	91,80	102,82
Syracuſe	pound	5044	138,78	155,44
Syria	mina	9117	76,78	85,99
Tangier	rotolo	7426	94,27	105,58
Teneriff	pound of Caſtille	7102	98,57	110,40
Tetuan	rotolo	10945	63,96	71,63
Thorn	pound	6502	107,66	120,58
Toulon	pound	6633	105,54	118,20
Toulouſe	pound	6418	109,07	122,15
Tournai	pound	6721	104,15	116,65
Treves	pound heavy weight	7975	87,77	98,31
	pound light weight	5247	133,41	149,42
Trieſte	pound Vienna weight	8650	80,92	90,64

AVOIRDUPOIS-WEIGHT.

Places	Weights	Contents of each weight Grains	Equiv. to 100 pounds Num. 100	Equiv. to 112 pounds Num. 100
Trieſte (continued) . . .	lb. Venice great weight.	7384	94,80	106,18
	lb. Venice ſmall weight.	4673	149,80	167,78
Tripoli in Barbary. . . .	rotolo	7850	89,17	99,87
Tripoli in Syria	rotolo	28037	24,97	27,96
	oke	18692	37,45	41,94
Tunis	rotolo	7661	91,37	102,34
Turin	pound	5696	122,89	137,63
Valencia	pound of 12 oz.	5498	127,32	142,60
	pound of 16 oz.	7331	95,48	106,94
	pound of 18 oz.	8247	84,88	95,07
Valenciennes	pound	7259	96,43	108,
Venice	pound great weight.	7384	94,80	106,18
	pound ſmall weight.	4673	149,80	167,78
Verona	pound great weight.	7677	91,18	102,12
	pound ſmall weight.	5136	136,30	152,65
Vicenza	pound great weight.	7523	93,05	104,21
	pound ſmall weight.	5247	133,41	149,42
Vienna	pound	8650	80,92	90,64
Ulm	pound	7234	96,76	108,37
UnitedStatesofAmerica	pound	7000	100,	112,
Warſaw.	pound	5853	119,60	133,95
Wiſmar	pound	7471	93,70	104,94
Windaw	pound	6377	109,76	122,23
Wirtemberg	pound	7225	96,89	108,52
Wurtzburg	pound	7362	95,08	106,49
Ypres	pound	6646	105,33	117,97
Zante	pound	7384	94,80	106,18
Zealand.	pound	7172	97,60	109,32

AVOIRDUPOIS-WEIGHT.

Places	Weights	Contents of each weight Grains	Equiv. to 100 pounds Num. 100	Equiv. to 112 pounds Num. 100
Zell	pound	7494	93,40	104,61
Zittau	pound	7221	96,94	108,57
Zurich	pound heavy weight	8138	86,01	96,33
	pound light weight	7234	96,76	108,37
Zutphen	pound	7259	96,43	108,
Zwoll	pound	7439	94,10	105,39

The following examples will ſhew in what manner the proportion between the weights of any two given countries may be aſcertained.

It is required to reduce 100 kilogrammes of France into pounds of Amſterdam.

The kilogramme of France weighing 15446 grains, and the pound of Amſterdam 7625, according to the table prefixed, I ſtate the following equation :

100 kilogrammes = x
1 kilogramme = 15446 grains
7625 grains = 1 pound
Reſult 202,57 pounds.

Reduce 100 pounds of Amſterdam into kilogrammes of France.

100 pounds = x
1 pound = 7625 grains
15446 grains = 1 kilogramme
Reſult 49,37 kilogrammes.

TABLE THE SIXTH,

Which ſhews the Quantity of Engliſh cubic Inches contained by each of the Corn Meaſures, and the Relation of foreign Meaſures to 10 Quarters Wincheſter Meaſure.

CORN MEASURE.

Places	Meaſures	Contents of each meaſure — Cubic in.	Equiv. to 10 quarters — Num. 100
Abbeville	ſetier	9355	18,63
Agen	ſac	5332	32,68
Aire	raziere	6136	28,40
Aix la Chapelle	fas	1460	119,35
Alckmaar	ſack	4938	35,29
Alexandria	rebebe	9578	18,19
	kiſloz	10407	16,74
Algiers	caffiſe	19485	8,94
Alicante	caffiſe	14901	11,69
Amersfort	mudden	13986	15,68
Amiens	ſetier	2003	87,
Amſterdam	laſt	177916	,98
	mudden	6590	26,44
	ſack	4942	35,26
	ſcheepel	1647	105,77
Ancona	rubbo	16645	10,47
Antwerp	viertel	4701	37,07
Apenrade	tonen	8355	20,85
Archangel	czetwer	11888	14,66
Arenſburg	laſt	187262	,93
Arles	ſetier	3628	48,03
Arnheim	mouver	8080	21,56
Augſburgh	ſchaf	26787	6,50
Avignon	boiſſeau	5612	31,05
Avila	fanega	3311	52,62
Azores	alquier	730	238,54
Barcelona	quartera	4238	41,11
Baſil	ſack	7866	22,15
Bautzen	ſcheffel	6657	26,17
Bayonne	conque	2503	69,61
Beaucaire	ſetier	3703	47,05
Beauvais	tonneau	118529	1,47

CORN MEASURE.

Places	Meaſures.	Contents of each meaſure	Equiv. to 10 quarters
		Cubic in.	Num. 100
Bergamo	ſtaja	1263	138,
Bergen op Zoom	fiſier	2818	61,83
Berlin	ſcheffel	3315	52,26
Bern	mutte	9650	18,06
Bilboa	fanega	3510	49,64
Bois-le-Duc	mouver	8671	20,09
Bologna	corba	4499	38,73
Bordeaux	boiſſeau	4678	37,25
Boulogne	ſetier	10525	16,55
Breda	viertel	5306	32,84
Bremen	ſcheffel	4336	40,19
Breſlaw	ſcheffel	4262	40,89
Breſt	tonneau	84200	2,07
Briel	ſœcke	4380	39,78
Bruges	hoeden	10157	17,15
Brunſwick	ſcheffel	18963	9,19
Bruſſels	ſack	7110	24,51
Cadiz	fanega	3311	52,67
Calabria	tomolo	3119	55,87
Calais	ſetier	10134	17,19
Campen	mudden	7137	24,41
Candia	carga	9356	18,62
Caſſel	viertel	8702	20,02
Caſtille	fanega	3311	52,67
Cleves	malter	10939	15,93
Coburg	ſimmer	5079	34,31
Colberg	ſcheffel	3029	57,52
Cologne	malter	9883	17,63
Concarneau	tonneau	84200	2,07
Conſtantinople	kiſloz	2140	81,40
Copenhagen	tœnde	8481	20,54
Corfu	moggio	6091	28,61
Corſica	ſtajo	6008	29,
Corunna	ferrado	986	176,71
Creutznach	malter	8874	19,63
Cyprus	medimno	4448	39,17
Dantzic	laſt	187310	,93
	ſcheffel Berlin meaſure.	3315	52,26
Darmſtadt	malter	6107	28,53

CORN MEASURE.

Places	Meaſures	Contents of each meaſure Cubic in.	Equiv. to 10 quarters Num. 100
Delft	ſack	6129	28,43
Denmark	tœnde	8481	20,54
Deventer	mudden	4938	35,29
Dieppe	raziere	6237	27,94
Dixmude	raziere	5828	29,90
Dordrecht	ſack	7406	23,53
Dreſden	ſcheffel	6455	27,
Dunkirk	ſea raziere	9875	17,64
	land raziere	8887	19,61
Eckrenforde	tonnen	8242	21,14
Edam	mudden	6590	26,44
Elbing	laſt	187310	,93
Embden	tonnen	11656	14,95
Enchuyſen	mudden	8080	21,56
England	quarter	17424	10,
	buſhel	2178	80,
Erfurt	ſcheffel	3430	50,80
Femeren	ſcheffel	2294	75,95
Ferrara	ſtaro	1843	94,54
Ferrol	ferrado	1104	157,83
Flenſburg	tonnen	8355	20,85
Florence	ſtajo	1444	120,67
France	boiſſeau of Paris	774	225,13
	décalitre*	610	285,64
Francfort on the Maine	malter	6584	26,46
Frederickſtadt	tonnen	7708	22,60
Gand	halſter	3175	54,89
Geneva	coupe	4735	36,80
Genoa	mina	7110	24,51
Gluckſtadt	tonnen	8716	20,
Goes	ſack	4444	39,21
Gorcum	mudden	10305	16,91
Gouda	ſack	6348	27,45
Granada	ſack	5924	29,41
Gravelines	raziere	8080	21,56
Grypſwald	ſcheffel	2375	73,36

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* The litre, or the unit of French meaſures of capacity, is therefore equivalent to 61 Engliſh cubic inches.

CORN MEASURE.

Places	Meaſures	Contents of each meaſure Cubic in.	Equiv. to 10 quarters Num. 100
Groningen	mudden	5386	32,35
Haarlem	ſack	4678	37,25
Hamburgh	laſt	192720	,90$\frac{3}{8}$
	ſack	12848	13,56
	ſcheffel	6424	27,12
	tonnen ſalt meaſure	11428	15,25
Hanau	malter	6862	25,39
Hanover	himten	1896	91,89
Harderwyck	mudden	5954	29,26
Harlingen	mudden	5386	32,35
Havre de Grace	boiſſeau	2108	82,66
Heidelberg	malter	6279	27,75
Heuſden	mudden	10305	16,91
Hildeſheim	himten	1581	110,23
Holſtein	himten	2007	86,82
Honfleur	boiſſeau	2390	72,91
Horn	ſack	4039	43,13
Huſum	tonnen	8924	19,52
Kiel	tonnen	7227	24,11
Konigſberg	ſcheffel new meaſure	3315	52,26
Laland	tonnen	8380	20,79
Leghorn	ſacco	4332	40,22
	ſtajo	1444	120,67
Leipſic	ſcheffel	8473	20,56
Lewarden	mudden	5386	32,35
Liebau	loof	3819	45,62
Libourne	ſac	5079	34,31
Liege	ſetier	1825	95,48
Liſbon	moyo	49440	3,52
	alquier	824	211,46
Liſle	raziere	4334	40,20
London	quarter	17424	10,
Lubec	laſt corn meaſure	195500	,89$\frac{5}{8}$
	ſcheffel rye meaſure	2037	85,54
	ſcheffel malt meaſure	2375	73,36
	ſcheffel oats meaſure	2392	72,84
Lucca	ſtajo	1495	116,55
Lunenburg	ſcheffel	3793	45,94
Lyons	anée	12538	13,90

CORN MEASURE.

Places	Meaſures	Contents of each meaſure Cubic in.	Equiv. to 10 quarters Num. 100
Madeira	alquier	683	255,11
Magdeburg	ſcheffel	3315	52,56
Majorca	quartera	4139	42,10
Malaga	ſanega	3642	47,84
Malta	ſalma	16240	10,73
Manfredonia	carro	114634	1,52
Manheim	malter	6279	27,75
Mantua	ſtajo	2124	82,04
Marans	tonneau	84200	2,07
Marſeilles	charge	9636	18,08
Maſtrick	ſetier	1382	126,08
Meiſſen	ſcheffel	6455	27,
Memel	ſcheffel	3315	52,26
Middleburg	ſack	4284	40,67
Milan	moggio	8436	20,66
Modena	ſtajo	4284	40,67
Montpellier	ſetier	3119	55,86
Montreuil	boiſſeau	520	335,08
Morlaix	boiſſeau	3229	53,96
Munich	ſchaff	22109	7,88
Muyden	mudden	8080	21,56
Nancy	carte	2921	59,65
Nantes	tonneau	152510	1,14¼
	ſetier	15251	11,42½
Naples	tomolo	3182	54,76
Narva	tonnen	9883	17,63
Neda in Galicia	ferrado	1104	157,83
Negropont	kiſloz	1849	94,23
Nieuport	raziere	10157	17,15
Nimeguen	mouver	8173	21,32
Nice	ſtajo	2349	74,18
Nuremberg	ſummer	20287	8,59
Oeſel	laſt	187260	,93
Oporto	alquier	1006	173,20
Oſnaburg	ſcheffel	1750	99,57
Oſtend	raziere	10706	16,27
Oudenwater	mudden	8465	20,58
Oviedo	ſanega	4415	39,47
Paris	ſetier	9288	18,76

CORN MEASURE.

Places	Meaſures	Contents of each meaſure — Cubic in.	Equiv. to 10 quarters — Num. 100
Paris (continued)	boiſſeau	774	225,13
	decalitre	610	285,64
Paſſau	ſechſling	19465	8,95
Patras	ſtaro	5006	34,81
Pernau	loof	3974	43,85
Perſia	artaba	3974	43,85
Piedmont	ſack	6489	26,85
Poland	laſt	187260	,93
Prague	ſtrick	5755	30,28
Purmerend	mudden	6590	26,44
Ratiſbon	metzen	2001	87,08
Ravenna	rubbo	16984	10,26
Rendſburg	tonnen	7558	23,05
Revel	tonnen	7212	24,16
Riga	tonnen	7948	21,92
	loof	3974	43,85
Rimini	rubbo	16984	10,26
Rochelle	tonneau	84200	2,07
Romagna	ſtaro	5506	31,64
Rome	rubbo	16684	10,44
Roſtock	ſcheffel wheat meaſure	2450	71,12
	ſcheffel oats meaſure	2723	63,99
Rotterdam	hoed	67755	2,57
	ſakken	6352	27,43
	achtendeelen	2117	82,31
Rouen	ſetier	10904	15,98
	boiſſeau	1363	127,83
Ruſſia	chetwer	11888	14,66
	chetwerick	1486	117,25
St. Ander	fanega	3311	52,67
St. Gall	charge	4443	39,22
St. Malo	tonneau	84200	2,07
St. Omer	raziere	7900	22,07
St. Peterſburgh	chetwer	11888	14,66
	chetwerick	1486	117,25
St. Sebaſtian	fanega	3311	52,67
St. Valery	ſetier	9356	18,62
Sardinia	ſtarello	2988	58,31
Schiedam	ſack	6352	27,43

CORN MEASURE.

Places	Meaſures.	Contents of each meaſure Cubic in.	Equiv. to 10 quarters Num. 100
Schleſwig	tonnen	8012	21,75
Schonhoven	mudden	8465	20,58
Scotland	firlot wheat meaſure	2197	79,31
	firlot barley meaſure	3207	54,33
Seville	fanega	3311	52,67
Sicily	ſalma groſſa	20215	8,62
	ſalma generale	16229	10,74
Smyrna	quillot	2141	81,38
Spain	fanega	3311	52,67
	celemine	276	631,30
Stettin	ſcheffel	2677	65,09
Stralſund	ſcheffel wheat meaſure	2609	66,78
	ſcheffel oats meaſure	2768	62,95
Straſburg	ſeſter city meaſure	1117	156,
	ſeſter country meaſure	1152	151,25
Sweden	tunna	8932	19,51
	tunna wheat meaſure	10050	17,34
	tunna malt meaſure	10607	16,43
	tunna ſalt meaſure	9491	18,36
	kappe	279	624,53
	kanna	159½	1092,42
Taraſcon	charge	3485	50,
Tarragona	ſetier	3442	50,62
Tervere	ſack	4557	38,24
Tiel	mudden	8465	20,58
Tonningen	tonnen	7406	23,53
Tortoſa	quartera	5414	32,18
Toulon	emine	6237	27,94
Tuſcany	moggio	32480	5,36½
Trieſte	ſtaro	4517	38,57
Tripoli	caffiſe	19920	8,75
Tunis	caffiſe	21830	7,98
Turin	emine	1168	149,18
Ulm	metzen	584	298,26
Utrecht	mudden	7110	24,50
Valencia	cahiz	12227	14,25
	barchilla	1019	171,
Valenciennes	mytur	4380	39,78
Vannes	tonneau	93556	1,86

CORN MEASURE.

Places	Meaſures	Contents of each meaſure Cubic in.	Equiv. to 10 quarters Num. 100
Venice	ſtaro	4941	35,27
Verona	minella	2248	77,51
Viana	alquier	989	176,18
Vienna	metzen	4277	40,74
Weimar	ſcheffel	5430	32,09
Wetzlar	malter	14275	12,20
Windaw	loof	3819	45,62
Wirtemburg	ſcheffel	3228	53,98
Wiſmar	ſcheffel	2496	69,81
Wolgaſt	ſcheffel	2609	66,78
Zante	bazzilo	2165	80,48
Zell	ſcheffel	18963	9,19
Ziriczee	ſack	4741	36,75
Zuric	mutte	5043	34,55
Zwickau	ſcheffel	4089	42,61
Zwoll	ſack	6836	25,49

The following examples will ſhew in what manner the proportion between the meaſures of any two given countries may be aſcertained.

It is required to reduce 100 alquiers of Liſbon into fanegas of Cadiz.

The alquier containing 824 cubic inches, and the fanega 3311, according to the table prefixed, I ſtate the following equation:

100 alquiers = x
1 alquier = 824 cubic inches
3311 cubic inches = 1 fanega
Reſult 24,89 fanegas.

Reduce 100 fanegas of Cadiz into alquiers of Liſbon.

100 fanegas = x
1 fanega = 3311 cubic inches
824 cubic inches = 1 alquier
Reſult 401,82 alquiers.

TABLE THE SEVENTH,

Which ſhews the Quantity of Engliſh Cubic Inches contained by each of the Meaſures uſed in the Sale of Liquids, and the Relation of foreign Meaſures to 100 *Engliſh Gallons Wine Meaſure.*

LIQUID MEASURE.

Places	Meaſures	Contents of each meaſure	Equiv. to 100 gallons
		Cubic in.	Num. 100
Alicante	cantara	622	37,14
Altona	tonne of 32 ſtubgens	7067	3,27
Amſterdam	ſtekan	1160	19,91
	viertel	442½	52,20
	ſtoopen	145	159,31
	mingel	72½	318,62
Ancona	boccale	87	265,51
Antwerp	ſtoopen	192¼	120,15
Arragon	cantara	585	39,49
Augſburg	maas	90⅓	255,72
Barcelona	carga wine meaſure	7599	3,04
	carga oil meaſure	7394	3,12
Bari	ſalm oil meaſure	10086	2,29
Baſil	pot new meaſure	76⅕	303,15
Berlin	naſs or maas	70⅛	329,41
Bern	maas	100½	229,85
Bologna	corba	4450	5,13
Bordeaux	velte	453	51,
Bremen	ſtubgen	193½	119,38
Breſlaw	quart	42⅓	545,67
Brunſwick	ſtubgen	223¾	103,24
Cadiz	*ſee Spain*		
Canary Iſlands	pipa	26794	,86
Canea	miſcala oil meaſure	686	33,67
Caſſel	viertel	499½	46,25
Cognac	velte	447½	51,62
Cologne	viertel	365	63,29
Conſtantinople	almud	319¼	72,36
Dantzic	ſtof wine meaſure	104⅗	220,84
	ſtof beer meaſure	140¼	164,70
Denmark	ahm	9128	2,53

LIQUID MEASURE.

Places	Meaſures	Contents of each meaſure Cubic in	Equiv. to 100 gallons Num. 100
Denmark (continued)	kanne wine meaſure	117¾	196,18
	tœnde beer meaſure	8011	2,88
	tœnde pitch meaſure	7067	3,27
Dijon	quartaut	6176	3,74
Dreſden	anker regular meaſure	2055	11,24
	tonne beer meaſure	5993	3,85
	kanen great meaſure	85⅝	269,79
	kanen ſmall meaſure	57	405,27
Dunkirk	pot	138	167,39
England	gallon wine meaſure	231	100,
	gallon beer meaſure	282	81,91
Ferrara	ſecchia	624	37,02
Florence	barile oil meaſure	1940	11,91
	barile wine meaſure	2425	9,53
	fiaſcho	121	190,90
	boccale	60½	381,80
France	hectolitre	6100	3,79
	litre	61	378,69
Francfort on the Maine	viertel	450	51,33
Gallipoli	ſalma	9392	2,46
Geneva	pot	58	398,27
Genoa	rubbo oil meaſure	521	44,34
	pinta wine meaſure	105	220,
Gotha	ſtubgen	206¾	111,73
Hamburgh	viertel	442	52,26
	ſtubgen	221	104,52
	kanne	110½	209,05
	tonne beer meaſure	10594	2,18
	tonne fiſh oil meaſure	7062	3,27
Hanover	ſtubgen	237	97,47
	tonne beer meaſure	6163	3,75
	tonne honey meaſure	6044	3,82
Heidelberg	viertel	562¼	41,08
Hungaria	eimer	4470	5,17
Konigſberg	ſtof	87½	264,
Leghorn	barile oil meaſure	1940	11,91
	barile wine meaſure	2425	9,53
	fiaſcho	121	190,90
	boccale	60½	381,80

LIQUID-MEASURE.

Places	Meaſures	Contents of each meaſure — Cubic in	Equiv. to 100 gallons — Num. 100
Leipſic	eimer	4625	5,00
	kanne	$73\frac{2}{5}$	314,71
Liſle	lot	128	180,47
Liſbon	almude	1040	22,21
	alquier	520	44,42
	canhada	$86\frac{2}{3}$	266,54
Lubec	ſtubgen	$220\frac{3}{4}$	104,65
Lucca	copa oil meaſure	6088	3,79
Lyons	pot	$58\frac{1}{10}$	397,62
Majorca	cortan oil meaſure	$251\frac{5}{8}$	91,80
Malaga	arroba	947	24,39
Mantua	moggio oil meaſure	6789	3,40
Marſeilles	millerolle	3640	6,35
	ſcandal	910	25,38
Maſſa	barile oil meaſure	2160	10,69
Mentz	maaſs	$113\frac{3}{4}$	203,08
Meſſina	ſalma wine meaſure	5270	4,38
	caffiſe oil meaſure	527	43,83
Minorca	quartillo	$349\frac{1}{2}$	66,09
Montpellier	pot wine meaſure	$64\frac{1}{8}$	360,23
	pot oil meaſure	$71\frac{3}{8}$	323,64
Naples	ſtara oil meaſure	3407	6,78
	barile wine meaſure	2541	9,09
Narva	ſtof	$78\frac{3}{5}$	293,90
Nice	rubbo oil meaſure	515	44,85
North	barrel pitch meaſure	7067	3,27
Nuremberg	maas tavern meaſure	$60\frac{1}{2}$	381,31
Oneglia	barile oil meaſure	3783	6,11
Oporto	aliquer	$675\frac{3}{4}$	34,18
	canhada	$112\frac{5}{8}$	205,10
Oſnaburg	kanne	$74\frac{3}{8}$	310,58
Oviedo	quartillo	$34\frac{1}{2}$	669,56
Paris	ſetier	$464\frac{4}{5}$	49,70
	pinte	$58\frac{1}{10}$	397,62
	litre new meaſure	61	378,69
Pernau	ſtof	$78\frac{3}{5}$	293,90
Pola	ſalma	9196	2,51
Prague	pint	116	199,14
Puglia	ſtaja	940	24,57
Ratiſbon	viertel	$216\frac{1}{2}$	106,70

LIQUID MEASURE.

Places	Meaſures	Contents of each meaſure — Cubic in.	Equiv. to 100 gallons — Num. 100
Revel	ſtof	72½	318,62
Riga	ſtof	75	308,
Rochelle	velt	447½	51,62
Rome	boccale	79⅘	289,47
Rotterdam	ſtoopen	156	148,08
Ruſſia	wedra	751	30,76
	kruſka	93⅞	246,07
Saragoſſa	cantara	584	39,55
Schafhauſen	maas	79⅘	289,47
Scotland	pint old meaſure	103⅖	223,40
Sicily	caſſiſe	695	33,24
Spain	moyo wine meaſure	15152	1,52
	cantara ditto	947	24,39
	azumbre ditto	118⅜	195,14
	quartillo ditto	29⅗	780,40
	arroba oil meaſure	740	31,22
	quartilla ditto	185	124,86
	libra ditto	29⅗	780,40
Stettin	nœſſel	44¾	516,20
Stralſund	ſtubgen	237	97,47
Straſburg	ſchoppen	29⅗	780,40
Sweden	kanna	159⅝	144,71
Toulon	millerolle	3927	5,88
Trieſte	orna oil meaſure	4003	5,77
	barile wine meaſure	4158	5,56
Tripoli	mataro	1375	16,80
Tunis	mataro oil meaſure	1155	20,
	mataro wine meaſure	577½	40,
Turin	pint	95½	241,89
Valencia	cantara	775⅝	29,78
Venice	miro oil meaſure	962	24,
	ſecchia wine meaſure	602¼	38,36
Verona	baſſo	275¾	83,77
Vienna	eimer	3614	6,39
	maas	90⅓	255,72
Zell	ſtubgen	237	97,47
Zurich	maas	111¼	207,64

The following examples will ſhew in what manner the proportion between the liquid meaſures of any two given countries may be aſcertained.

EXAMPLES.

Let it be required to reduce 100 litres new French meaſure into Spaniſh quartillos wine meaſure.

The French litre meaſuring internally 61 Engliſh cubic inches, and the Spaniſh quartillo $29\frac{3}{5}$, according to the table prefixed, I ſtate the following equation:

100 litres = x
1 litre = 61 cubic inches
$29\frac{3}{5}$ cubic inches = 1 quartillo
Reſult 206,08 quartillos.

Reduce 100 quartillos wine meaſure of Spain into litres new meaſure of France.

100 quartillos = x
1 quartillo = $29\frac{3}{5}$ cubic inches
61 cubic inches = 1 litre
Reſult 48,52 litres.

TABLE THE EIGHTH,

Which ſhews the Length in Engliſh Lines of each of the Meaſures uſed in the Sale of Cloths, Linens, and Silk Stuffs, and the Relation of foreign Meaſures to 100 *Yards and* 100 *Ells Engliſh Meaſure.*

CLOTH MEASURE.

Places	Meaſures	Length of each meaſure Lines 100	Equiv. to 100 yards Num. 100	Equiv. to 100 ells Num. 100
Abbeville	aune	558,25	77,38	96,73
Aix la Chapelle	elle	315,35	137,	171,25
Aleppo	pike	319,40	135,25	169,06
Alexandria	pike	319,60	135,17	168,96
Algiers	pike long meaſure	294,05	146,91	183,64
	pike ſhort meaſure	220,53	95,89	244,86
Alicante	vara	399,20	108,22	135,27
Altona	elle	270,60	159,64	199,50
	elle Brabant meaſure	326,54	132,30	165,37
Amberg	elle	394,40	109,53	136,91
Amſterdam	elle	326,	132,51	165,64
Ancona	braccio	303,40	142,38	177,98
Anſpach	elle	289,80	149,07	186,34
Antwerp	aune long meaſure	327,90	131,75	164,69
	aune ſhort meaſure	323,25	133,64	167,05
Archangel	archine	336,	128,57	160,71
Arragon	vara	364,13	118,64	148,30
Arras	aune	329,65	131,05	163,81
Augſburg	elle long meaſure	287,85	150,08	187,60
	elle ſhort meaſure	279,75	154,42	193,02
Avignon	canne	918,80	47,02	58,77
	aune	551,20	78,37	97,96
Baſil	aune	556,80	77,58	96,98
Bamberg	elle	344,65	125,35	156,69
Barcelona	cana	727,45	59,39	74,23
Bayreuth	elle	283,60	152,33	190,41
Batavia	covid	237,60	181,82	227,27
Bautzen	elle	272,	158,82	198,53
Bayonne	aune	417,40	103,50	129,38
Bengal	covid	108,	400,	500,
Bergamo	braccio	309,50	139,58	174,47
Bergen	elle	296,45	145,72	182,15

CLOTH MEASURE.

Places	Meaſures	Length of each meaſure — Lines 100	Equiv. to 100 yards — Num. 100	Equiv. to 100 ells — Num. 100
Berg-op-Zoom.	elle	327,07	132,08	165,10
Berlin	elle	314,90	137,19	171,48
Bern	elle	255.80	168,89	211,10
Bielefeld	elle	276,25	156,38	195,47
Bilboa	vara	395,25	109,30	136,62
Bologna	braccio for ſilk ſtuffs	281,25	153,60	192,
	braccio for cloths	299,90	144,05	180,06
Bolzano	elle	373,20	115,75	144,69
	braccio	259,60	166,40	208,
Bombay	cuz	336,	128,57	160,71
	heat	216,	200,	250,
Bordeaux	aune	562,51	76,80	96,
Brabant	aune	326,54	132,30	165,37
Breda	elle	327,07	132,08	165,10
Bremen	elle	273,15	158,15	197,69
Breſcia	braccio	221,06	195,42	244,28
Breſlaw	elle	259,65	166,38	207,97
	elle Sileſia meaſure	272,	158,82	198,53
Bretagne	aune	636,25	67,90	84,87
Bruges	aune	327,90	131,75	164,69
	aune for linens	342,40	126,17	157,71
Brunſwick	elle	269,55	160,27	200,33
Bruſſels	aune long meaſure	327,90	131,75	164,69
	aune ſhort meaſure	323,25	133,64	167,05
Burgos	vara	395,25	109,30	136,62
Cadiz	vara	395,25	109,30	136,62
	ana Brabant meaſure	327,90	131,75	164,69
Caën	aune	558,25	77,38	96,73
Cagliari	raſo	259,20	166,66	208,33
Cairo	pike	319,60	135,17	168,96
Calais	aune	558,25	77,38	96,73
Calicut	covid	216,	200,	250,
	guz	338,40	127,66	159,57
Cambrai	aune	338,35	127,68	159,60
Canary Iſlands.	vara	406,20	106,35	132,94
Candia	pike	301,	143,52	179,40
Canton	covid	175,50	246,15	307,70
Carthagena	vara	395,25	109,30	136,62
Caſſel	elle	265,	163,	203,75

CLOTH MEASURE.

Places	Meaſures	Length of each meaſure Lines 100	Equiv. to 100 yards Num. 10	Equiv. to 100 ells Num. 100
Caſtille	vara	395,25	109,30	136,62
Chambery	raſo	271,35	159,20	199,
China	covid	175,50	246,15	307,70
Chriſtiania	elle	296,45	145,72	182,15
Coblentz	elle	263,55	163,91	204,89
Coburg	elle	276,90	156,	195,
Cologne	elle long meaſure	328,15	131,65	164,56
	elle ſhort meaſure	271,15	159,32	199,15
Conſtance	elle long meaſure	351,05	123,06	153,82
	elle ſhort meaſure	326,33	132,38	165,48
Conſtantinople	pike long meaſure	316,	136,70	170,88
	pike ſhort meaſure	306,	141,18	176,47
Copenhagen	alen	296,45	145,72	182,15
Corfu	pike	271,	159,41	199,26
Corſica	palmo	118,15	365,64	457,05
Cracow	elle	291,40	148,25	185,32
Cremona	braccio	290,50	148,70	185,93
Cyprus	pike	317,15	136,21	170,26
Damaſcus	pike	274,85	157,17	196,47
Dantzic	elle	271,	159,41	199,26
Delft	elle	326,	132,51	165,64
Denmark	alen	296,45	145,72	182,15
Dreſden	elle	267,30	161,61	202,02
Dublin	yard	432,	100,	125,
	ell	540,	80,	100.
Dunkirk	aune	319,40	135,25	169.06
Duſſeldorf	elle	254,80	169,54	211,93
Elbing	elle	266,88	161,87	202,34
Embden	elle	316,60	136,45	170,56
England	yard	432,	100,	125,
	ell	540,	80,	100,
Erfurt	elle long meaſure	259,60	166,40	208,
	elle ſhort meaſure	190,70	226,53	283,17
Erlang	elle	311,50	138,62	173,35
Fermo	braccio	310,	139,35	174,20
Ferrara	braccio for cloths	316,	136,70	170,88
	braccio for ſilk ſtuffs	297,	145,45	181,82
Flenſburg	elle	270,60	159,64	199,50

CLOTH MEASURE.

Places	Meaſures	Length of each meaſure Lines 100	Equiv. to 100 yards Num. 100	Equiv. to 100 ells Num. 100
Florence	braccio for cloths	278,90	154,90	193,62
	braccio for ſilk ſtuffs	274,85	157,17	196,47
Forli	braccio	290,50	148,70	185,93
France	aune of 528 lines	562,51	76,80	96,
	metre	472,27	91,47	114,34
Francfort on the Maine	elle	254,80	169,54	211,93
	elle Brabant meaſure	326,54	132,30	165,37
	aune of Paris	561,27	76,97	96,21
Francfort on the Oder	elle	313,33	137,87	172,34
Freyberg	elle	267,60	161,43	201,79
Gand	aune	327,90	131,75	164,69
	aune for linens	342,40	126,17	157,71
Geneva	aune	540,13	79,98	99,97
	aune of France	562,51	76,80	96,
Genoa	canna of 10½ palmi	1245,10	34,70	43,37
	canna of 10 palmi	1185,80	36,43	45,54
	canna of 9 palmi	1067,20	40,48	50,60
	braccio	276,70	156,13	195,16
	palmo	118,58	364,32	455,40
Gibraltar	vara	395,25	109,30	136,62
Glatz	elle	276,80	156,07	195,08
Gombroon	gueze	464,52	93,	116,25
Gorlitz	elle	256,25	169,90	212,37
Gottenburg	alle	280,40	154,06	192,58
Gottingen	elle	274,85	157,17	196,47
Guaſtalla	braccio	321,85	134,22	167,78
Gueldres	elle	313,22	137,92	172,40
Guinea	jactam	1728,	25,	31,25
Halle	elle long meaſure	314,90	137,19	171,48
	elle ſhort meaſure	269,75	160,15	200,18
Hamburgh	elle	270,60	159,64	199,50
	elle Brabant meaſure	326,54	132,30	165,37
Hanover	elle	274,85	157,17	196,47
Harburg	elle	274,85	157,17	196,47
Harlem	elle	343,70	125,69	157,11
Havre de Grace	aune	558,25	77,38	96,73
Hague	elle	326,	132,51	165,64

CLOTH MEASURE.

Places	Meaſures	Length of each meaſure Lines 100	Equiv. to 100 yards Num. 100	Equiv. to 100 ells Num. 100
Heidelberg	elle	394,25	109,57	136,97
Hildeſheim	elle	264,53	163,30	204,13
Hirchſberg	elle	272,	158,82	198,53
Hoff	elle	301,	143,52	179,40
Jagerndorf	elle	268,50	160,90	201,12
Japan	inck	897,60	48,13	60,16
Java	covid	237,60	181,82	227,27
Jeruſalem	pike	324,	133,33	166,67
Ingolſtadt	elle	376,07	114,87	143,59
Inſpruck	elle	371,30	116,35	145,23
Kiel	elle	271,70	159,	198,75
Kintzingen	elle	281,60	153,41	191,76
Konigſberg	elle	314,90	137,19	171,48
Krems	elle	353,25	122,29	152,87
Lauban	elle	266,25	169,90	212,37
Leghorn	canna for cloths	1115,60	38,72	48,40
	braccio	278,90	154,90	193,62
	palmo	139,45	309,80	387,24
	canna for ſilk ſtuffs	1099,40	39,29	49,12
	braccio	274,85	157,17	196,47
	palmo	137,42	314,34	392,94
Leipſic	elle	267,	161,80	202,25
Leutkirch	elle	331,87	130,17	162,72
Leyden	elle	322,60	133,91	167,39
Liebau	elle	267,	161,80	202,25
Liege	elle	260,50	165,84	207,30
Liſbon	vara	517,80	83,43	104,29
	covado	319,85	135,06	168,83
	palmo craveiro	106,62	405,17	506,47
	palmo menor	103,56	417,15	521,44
Liſle	aune	332,40	129,96	162,45
London	yard	432,	100,	125,
	ell	540,	80,	100,
Louvain	aune long meaſure	327,90	131,75	164,69
	aune ſhort meaſure	323,25	133,64	167,05
Lubec	elle	272,50	158,52	198,16
Lucca	braccio for cloths	285,84	151,13	188,92
	braccio for ſilk ſtuffs	273,25	158,10	197,62
Lunenburg	elle	274,85	157,17	196,47

CLOTH MEASURE.

Places	Meaſures	Length of each meaſure Lines 100	Equiv. to 100 yards Num. 100	Equiv. to 100 ells Num. 100
Lyons	aune	552,70	78,16	97,70
Madeira	vara	517,80	83,43	104,29
Madras	covid	216,	200,	250,
Madrid	vara	395,25	109,30	136,62
Magdeburg	elle	314,90	137,19	171,48
Mahon	cana	756,	57,14	71,43
Majorca	cana	810,	53,33	66,66
Malaga	vara	395,25	109,30	136,62
Malines	aune	323,25	133,64	167,05
Malta	canna	1058,40	40,82	51,02
Manheim	elle	263,45	163,98	204,97
Mantua	braccio	219,70	196,63	245,79
Marſeilles	canne	948,20	45,56	56,95
	aune	552,60	78,18	97,72
Maſtrick	elle	322,80	133,83	167,28
Mecca	covid	324,	133,33	166,66
Memel	elle	271,	159,41	199,26
Memmingen	elle	331,33	130,38	162,98
Mentz	elle	259,20	166,66	208,33
Meſſina	canna	918,72	47,02	58,77
	palmo	114,84	376,18	470,22
Middelburg	elle	326,	132,51	165,64
Milan	braccio for cloths	319,40	135,25	169,06
	braccio for ſilk ſtuffs	253,34	170,52	213,15
Minden	elle	273,40	158,	197,50
Minorca	cana	756,	57,14	71,43
Mocha	guz	300,	144,	180,
	covid	216,	200,	250,
Modena	braccio	302,35	142,88	178,60
Montpellier	canne	946,	45,66	57,08
Morea	pike	216,	200,	250,
Morlaix	aune	636,25	67,90	84,87
Morocco	covado	238,10	181,44	226,80
Munich	elle	394,30	109,56	136,95
Munſter	elle	381,80	113,15	141,43
Munden	elle	276,15	156,44	195,55
Namur	elle	313,22	137,92	172,40
Nantes	aune of Bretagne	636,25	67,90	84,87

CLOTH MEASURE.

Places	Meaſures	Length of each meaſure Lines 100	Equiv. to 100 yards Num. 100	Equiv. to 100 ells Num. 100
Naples	canna	996,32	43,36	54,20
	palmo	124,54	346,88	433,60
Narva	elle	279,66	154,47	193,09
	archine	336,	128,57	160,71
Naumburg	elle	267,	161,80	202,25
Negropont	pike	291,	148,45	185,57
Neuſchatel	elle	525,45	82,22	102,77
Nice	raſo	259,20	166,66	208,33
	palmo	124,65	346,57	433,21
Nienburg	elle	274,85	157,17	196,47
Nimeguen	elle	313,22	137,92	172,40
Nordlingen	elle	288,40	149,80	187,24
Norway	elle	296,45	145,72	182,15
Nuremberg	elle	311,50	138,68	173,35
Oporto	vara	517,80	83,43	104,29
	covado	313,62	137,75	172,18
	palmo craveiro	104,54	413,25	516,54
	palmo menor	103,56	417,50	521,44
Oran	vara	395,25	109,30	136,62
	pike for cloths	324,	133,33	166,66
Oſnabruck	elle	275,50	156,80	196,
	elle for linens	284,20	152,	190,
Oſtend	aune	330,25	130,81	163,51
Oſterode	elle	274,85	157,17	196,47
Oudenard	elle	315,35	137,	171,25
Oviedo	vara	407,50	106,02	132,52
Paderborn	elle	254,80	169,54	211,93
Padua	braccio	316,75	136,38	170,48
Palermo	canna	918,72	47,02	58,77
	palmo	114,84	376,18	470,22
Paris	aune of 528 lines	562,51	76,80	96,
	aune of $526\frac{5}{6}$ lines	561,27	76,97	96,21
	aune of 524 lines	558,25	77,38	96,73
	metre	472,27	91,47	114,34
Parma	braccio	258,15	167,35	209,19
Patras	pike for cloths and linens	324,	133,33	166,66
	pike for ſilk ſtuffs	300,	144,	180,
Pekin	peking	168,33	256,64	320,80
Pernau	elle	259,10	166,75	208,41

CLOTH MEASURE.

Places	Meaſures	Length of each meaſure	Equiv. to 100 yards	Equiv. to 100 ells
		Lines 100	Num. 100	Num. 100
Perſia	gueze	297,50	145,21	181,52
	gueze monkelſe	446,40	96,77	120,97
Perugia	braccio	305,34	141,48	176,85
Piedmont	raſo	281,25	153,60	192,
Piſa	palmo	140,95	306,50	383,12
Placentia	braccio	306,30	141,04	176,30
Poland	elle	291,40	148,25	185,32
Pondicherry	covid	216,	200,	250,
Pontremoli	braccio	326,10	132,47	165,59
Poſen	elle	269,	160,59	200,74
Prague	elle	279,	154,84	193,55
Preſburg	elle	263,60	163,89	204,86
Queda	covid	216,	200,	250,
Raguſa	ana	242,40	178,22	222,78
Ratiſbon	elle	383,	112,80	141,
Ratzeburg	elle	274,85	157,17	196,47
Ravenna	braccio	317,50	136,06	170,08
Ravenſburg	elle	324,60	133,08	166,36
Reccanati	braccio	314,20	137,50	171,87
Reggio	braccio	250,20	172,66	215,82
Revel	elle	252,80	170,88	213,60
Rhodes	pike	357,	121,	151,25
Riga	elle	258,90	166,86	208,57
Rimini	braccio	302,35	142,88	178,60
Rochelle	aune	558,25	77,38	96,73
Rome	canna for linens	987,	43,77	54,71
	braccio ditto	299,80	144,10	180,12
	canna for cloths and ſilk ſtuffs	939,66	45,97	57,47
	braccio ditto	400,50	107,86	134,83
Roſtock	elle	273,15	158,15	197,69
Rotenburg	elle	276,90	156,	195,
Rotterdam	elle	326,	132,51	165,64
Rouen	aune for cloths	549,75	78,58	98,23
	aune for linens	659,68	65,49	81,86
Roveredo	braccio for cloths	299,90	144,05	180,06
	braccio for ſilk ſtuffs	351,80	122,80	153,50
Ruremonde	elle	324,	133,33	166,66
Ruſſia	archine	336,	128,57	160,71

CLOTH MEASURE.

Places	Meaſures	Length of each meaſure — Lines 100	Equiv. to 100 yards — Num. 100	Equiv. to 100 ells — Num. 100
Saltzburg	elle for ſilk ſtuffs	379,15	113,94	142,42
	elle for cloths.........	474,95	90,96	113,70
Sayd.........	pike	285,50	151,31	189,14
St. Gall	elle for cloths.........	291,	148,45	185,57
	elle for linens.........	378,30	114,20	142,75
St. Malo	aune	636,25	67,90	84,87
St. Peterſburg.	archine..............	336,	128,57	160,71
St. Sebaſtian ..	vara	395,25	109,30	136,62
Saragoſſa.....	cana	978,40	44,15	55,19
Sardinia	raſo	259,20	166,66	208,33
	palmo..............	118,58	364,32	455,40
Schafhauſen ..	elle	285,	151,58	189,47
Schweinfurt...	elle	275,50	156,80	196,
Scio	pike long meaſure.....	324,	133,33	166,66
	pike ſhort meaſure	311,80	138,55	173,19
Scotland	ell old meaſure	446,40	96,77	120,96
Seville.......	vara	395,25	109,30	136,62
Siam	ken	453,85	95,18	118,98
	covid	216,	200,	250,
Sicily	canna	918,72	47,02	58,77
	palmo	114,84	376,18	470,22
Sienna	braccio for linens.....	283,50	152,38	190,48
	braccio for cloths.....	178,35	242,22	302,78
Sileſia	elle...............	272,	158,82	198,53
Smyrna	pike	324,	133,33	166,66
Soleure.......	elle...............	259,60	166,40	208,
Spain	vara	395,25	109,30	136,62
Stade	elle...............	274,85	157,17	196,47
Stettin.......	elle	307,36	140,55	175,69
Stockholm ...	elle	280,40	154,06	192,58
Stralſund	elle	274,85	157,17	196,47
Straſburg	elle	562,51	76,80	96,
	brache	254,60	169,68	212,10
Surat	guz	336,	128,57	160,71
	cobit	216,	200,	250,
Sweden	elle	280,40	154,06	192,58
Teneriff	vara	395,25	109,30	136,62
Thorn	elle	269,	160,59	200,74
Toledo	vara	395,25	109,30	136,62
Tortoſa	cana	751,75	57,46	71,83
Toulon	canne	915,80	47,17	58,96

CLOTH MEASURE.

Places	Meaſures	Length of each meaſure — Lines 100	Equiv. to 100 yards — Num. 100	Equiv. to 100 ells — Num. 100
Toulouſe	canne	859,75	50,25	62,81
Tournai	aune	292,45	147,72	184,65
Trente	elle for cloths	319,60	135,17	168,96
	elle for ſilk ſtuffs	289,	149,48	186,85
Treves	elle	263,60	163,89	204,86
Trevigo	braccio	316,75	136,38	170,48
Trieſte	elle for cloths	319,20	135,34	169,17
	elle for ſilk ſtuffs	302,55	142,78	178,48
Tripoli in Barbary	pike	260,90	165,58	206,98
Tripoli in Syria	pike	324,	133,33	166,66
Troppau	elle	268,50	160,90	201,12
Troyes	aune	374,70	115,29	144,12
Tunis	pike for cloths	317,80	135,93	169,92
	pike for ſilk ſtuffs	297,93	145,	181,25
	pike for linens	223,40	193,38	241,72
Turkey	pike long meaſure	316,	136,70	170,88
	pike ſhort meaſure	306,	141,18	176,47
Turin	raſo	284,90	151,63	189,54
Ulm	elle	268,50	160,90	201,12
Valencia	vara	428,20	100,88	126,10
Valenciennes	aune	311,10	138,86	173,58
Venice	braccio for cloths	314,90	137,19	171,48
	braccio for ſilk ſtuffs	296,40	145,75	182,18
Verden	elle	274,85	157,17	196,47
Verona	braccio	296,40	145,75	182,18
Vicenza	braccio	323,45	133,56	166,95
Vienna	elle	367,	117,71	147,14
Waldenburg	elle	272,	158,82	198,53
Warendorf	elle	276,25	156,38	195,47
Warſaw	elle	291,40	148,25	185,32
Windeſheim	elle	311,50	138,68	173,35
Wirtemburg	elle	318,	135,85	169,81
Wiſmar	elle	275,30	156,92	196,15
Wurtzburg	elle	274,10	157,60	197,
Xativa	vara	420,50	102,73	128,42
Ypres	aune	330,25	130,81	163,51
Zell	elle	274,85	157,17	196,47
Zittau	elle	269,10	160,54	200,67
Zurich	elle	283,40	152,43	190,54

The following examples will ſhew in what manner the proportion between the meaſures of any two given countries may be aſcertained.

EXAMPLES.

Let it be required to reduce 100 archines of Ruſſia into varas of Spain.

The archine meaſuring 336 Engliſh lines, and the vara 395,25, according to the table prefixed, I ſtate the following equation:

100 archines = x
1 archine = 336 lines
395,25 lines = 1 vara
Reſult 85,01 varas.

Reduce 100 varas into archines.

100 varas = x
1 vara = 395,25 lines
336 lines = 1 archine
Reſult 117,63 archines.

TABLE THE NINTH,

Which ſhews the Length in Engliſh Lines of the ſeveral Long Meaſures, and the Relation of foreign Meaſures to 100 Engliſh Feet.

LONG MEASURE.

Places	Meaſures	Length of each meaſure — Lines 100	Equiv. to 100 feet — Num.100
Aix la Chapelle	foot	136,90	105,19
Amſterdam	foot	134,25	107,26
Anſpach	foot	140,63	102,40
Antwerp	foot	134,86	106,75
Augſburgh	foot	139,88	102,94
Baſil	foot	140,85	102,24
Bavaria	foot	105,05	137,08
Bergen	palm	41,87	343,92
Berlin	foot	146,27	98,45
Bern	foot	138,50	103,97
Bologna	paſo	896,	16,07
	foot	179,20	80,36
Bremen	foot	136,58	105,43
Breſcia	braccio	221,06	65,14
Breſlaw	foot	134,25	107,26
Briel	foot	158,30	90,97
Brunſwick	foot	134,77	106,86
Bruſſels	foot	137,43	104,78
Cagliari	palmo	95,67	150,52
Cairo	derah	262,	54,96
Carara	palmo	115,20	125,
Caſtille	paſo	658,75	21,86
	foot	131,75	109,30
	palmo	98,81	145,73
China	foot for merchants	159,80	90,11
	foot for mathematicians	157,35	91,51
	kongpu for architects	152,45	94,46
	foot land meaſure	150,96	95,39
Cleves	foot	139,56	103,18
Cologne	foot	129,97	110,80
Conſtantinople	foot	334,50	43,05
Cracow	foot	168,33	85,55
Dantzic	foot	135,50	106,27

LONG MEASURE.

Places	Meaſures	Length of each meaſure — Lines 100	Equiv. to 100 feet — Num. 100
Denmark	faum	889,32	16,19
	foot	148,22	97,15
Dordrecht	foot	170,	84,71
Dreſden	foot	133,65	107,74
Egypt	derah	262,	54,96
Embden	foot	139,88	102,94
England	foot	144,	100,
Erfurt	foot	133,28	108,05
Ferrol	codo	263,	54,75
	foot	131,50	109,50
	palmo	32,87	438,
Florence	braccio	258,90	55,62
France	toiſe	920,46	15,64
	pied de roi	153,41	93,86
	metre	472,27	30,49
Francfort on the Maine	foot	135,30	106,43
Geneva	foot	230,44	62,49
Genoa	palmo	118,58	121,44
Goes	foot	141,60	101,70
Gottingen	foot	137,43	104,78
Gotha	foot	135,85	106,
Greece	foot	144,68	99,53
Groningen	foot	137,97	104,37
Halle	foot	140,63	102,40
Hamburgh	foot	135,30	106,43
Hanover	foot	137,43	104,78
Harlem	foot	137,43	104,78
Hague	foot	153,41	93,86
Heidelberg	foot	131,57	109,44
Hildeſheim	foot	132,26	108,88
Holland	foot	134,25	107,26
Holſtein	foot	140,95	102,16
Inſpruck	foot	150,	96,
Konigſberg	foot	145,32	99,09
Leghorn	palmo	32,87	438,
	braccio	258,90	55,62
Leipſic	foot	133,50	107,86
Leyden	foot	148,08	97,24
Liege	foot	135,85	106,
Liſbon	foot	159,92	90,05
	palmo long meaſure	106,62	135,06

LONG MEASURE.

Places	Meaſures	Length of each meaſure Lines 100	Equiv. to 100 feet Num. 100
Liſbon (continued)	palmo ſhort meaſure	103,56	139,05
London	foot	144,	100,
Louvain	foot	134,86	106,75
Lubeck	foot	137,43	104,78
Lunenburg	foot	137,43	104,78
Lyons	foot	161,40	89,22
Magdeburg	foot	133,92	107,53
Manheim	foot	137,	105,10
Mantua	braccio	219,70	65,54
Maſtrick	foot	132,64	108,57
Mecklenburg	foot	137,43	104,78
Mentz	foot	142,23	101,25
Middleburg	foot	141,70	101,62
Milan	foot	187,50	76,80
Munich	foot	105,05	137,08
Muſcovy	foot	158,	91,14
Naples	palmo	124,54	115,62
Neufchatel	foot	141,70	101,62
Nuremberg	foot	143,50	100,35
Oldenburg	foot	139,88	102,94
Oſnaburg	foot	131,90	109,17
Padua	foot	167,25	86,10
Palermo	palmo	114,84	125,39
Paris	toiſe	920,46	15,64
	pied de roi	153,41	93,86
	metre	472,27	30,49
Parma	braccio	258,15	55,78
Perſia	ariſch	459,20	31,36
Placentia	braccio	258,14	55,78
Pomerania	foot	137,97	104,37
Prague	foot	142,55	101,02
Ratzeburg	foot	137,43	104,78
Reggio	braccio	250,20	57,55
Revel	foot	126,40	113,92
Rhine	foot	148,23	97,15
Riga	foot	129,45	111,24
	foot of Holland	134,25	107,26
Rimini	braccio	256,75	56,08
Rome	foot	139,14	103,50
	palmo	105,47	136,53

LONG MEASURE.

		Length of each meaſure	Equiv. to 100 feet
Places	Meaſures	Lines 100	Num. 100
Roſtock	foot	136,58	105,43
Rotterdam	foot	147,55	97,59
Rouen	foot	127,84	112,64
Ruſſia	foot Rheniſh	148,23	97,15
	foot Engliſh	144,	100,
Samos	foot	163,40	88,13
Sardinia	palmo of Genoa	118,58	121,44
	palmo of Cagliari	95,68	150,50
Siam	ken	453,85	31,73
Stade	foot	137,43	104,78
Stettin	foot	133,50	107,86
Stockholm	foot	140,20	102,71
Stralſund	foot	133,50	107,86
Straſburg	foot	136,66	105,37
Sweden	faum	841,20	17,12
	foot	140,20	102,71
Switzerland	foot	141,70	101,62
Turin	foot	152,56	94,39
Ulm	foot	136,48	105,50
Utrecht	foot	128,90	111,71
Valencia	foot	142,72	100,90
Venice	foot	164,07	87,77
Verden	foot	137,43	104,78
Verona	foot	164,07	87,77
Vienna	foot	151,28	95,18
Wirtemberg	foot	137,43	104,78
Wiſmar	foot	138,93	103,65
Zell	foot	137,43	104,78
Ziriczee	foot	146,60	98,23
Zurich	foot	141,70	101,62

The following examples will ſhew in what manner the proportion between the long meaſure of any two given countries may be aſcertained.

EXAMPLES.

It is required to reduce 100 metres new meaſure of France into feet of Hamburgh.

The French metre meaſuring 472,27 Engliſh lines, and the Hamburgh foot 135,30, according to the table prefixed, I ſtate the following equation:

100 metres = x
1 metre = 472,27 lines
135,30 lines = 1 foot
Reſult 349,05 feet.

Reduce 100 feet of Hamburgh into metres of France.

100 feet = x
1 foot = 135,30 lines
472,27 lines = 1 metre
Reſult 28,65 metres.

TABLE THE TENTH,

Which ſhews the Contents in Engliſh Square Feet of the ſeveral Land Meaſures, and the Relation of foreign Meaſures to 100 Acres Engliſh Meaſure.

LAND MEASURE.

Places	Meaſures	Contents of each meaſure	Equiv. to 100 acres
		Squ. feet	Num. 100
Amſterdam	morgen	87630	49,71
Baſil	juchart	34368	126,75
Berlin	great morgen	61182	71,20
	little morgen	27531	158,22
Bern	juchart field meaſure	28979	150,32
	juchart foreſt meaſure	41729	104,39
Dantzic	morgen	59927	72,69
Denmark	tœnde-hart-korn	118715	36,69
England	acre	43560	100,
Florence	ſoccate	53461	81,48
France	arpent *de Paris*	36865	118,16
	arpent *des eaux et forêts*	55071	79,10
	hectare	107830	40,40
Franconia	morgen	39157	111,25
Geneva	journée	55707	80,02
Hamburgh	morgen	135941	32,04
Hanover	morgen	28050	155,29
Ireland	acre	70560	61,73
Rhine	morgen land meaſure	18354	237,33
	ditto for foreſts	24472	178,
	ditto for vineyards	16994	256,32
	thauen	13767	316,40
	juchart	9178	474,60
Ruſſia	deſſaetina	124620	34,95
Saxony	acker	59450	73,27
	morgen, Dreſden meaſure	29725	146,54
Schleſwig	pfluge	190350	22,88
Scotland	acre	55354	78,70
Spain	fanegada	48215	90,35
	aranzada	40514	107,52
Sweden	tuna land meaſure	53218	81,85
Switzerland	fauxe	70818	61,51
	morgen	35409	123,02
Vienna	jochen	63728	68,35
Wirtemburg	great morgen	61182	71,20
	little morgen	35849	121,51
Zurich	juchart	34941	124,67
	ditto for foreſts	38823	112,20

The following examples will ſhew in what manner the proportion between the land meaſures of any two given countries may be aſcertained.

EXAMPLES.

It is required to reduce 100 deſſaetinas of Ruſſia into fanegadas of Spain.

The deſſaetina meaſuring 124620 ſquare feet of England, and the fanegada 48215, according to the table prefixed, I ſtate the following equation:

100 deſſaetinas = x

1 deſſaetina = 124620 ſquare feet

48215 ſquare feet = 1 fanegada

Reſult 258,47 fanegadas.

Reduce 100 fanegadas into deſſaetinas.

100 fanegadas = x

1 fanegada = 48215 ſquare feet

124620 ſquare feet = 1 deſſaetina

Reſult 38,69 deſſaetinas.

TABLE THE ELEVENTH,

Which ſhews the Length in Engliſh Feet of the ſeveral Itinerary Meaſures, and the Relation of thoſe Meaſures to 1 Degree of the Terreſtrial Meridian, equal to 364420 Engliſh Feet.

ITINERARY MEASURE.

Places	Meaſures	Length of each meaſure Feet	Equiv. to 1 degree Nam.100
Arabia	milla	6441	56,58
Brandenburg	meile	34725	10,50
Denmark	mil	24704	14,75
England	mile by land	5280	69,02
	mile by ſea	$6073\frac{2}{3}$	60,
	league marine	18221	20,
Flanders	mille	20587	17,70
France	lieue terreſtre	$14576\frac{4}{5}$	25,
	lieue moyenne	16398	22,22
	lieue de poſte	12784	28,50
	lieue marine	18221	20,
	myriametre	32797	11,11
Germany	meile	20587	17,70
	meile geographical	$24294\frac{2}{3}$	15,
Hamburgh	meile	24704	14,75
Holland	meile	19212	18,97
Hungary	meile	27378	13,31
India	paraſang	$12147\frac{1}{3}$	30,
Ireland	mile	$9110\frac{1}{2}$	40,
Italy	milla	$6073\frac{2}{3}$	60,
Lithuania	meile	29336	12,42
Perſia	paraſang	16356	22,28
Poland	meile	18221	20,
Portugal	legua	$20245\frac{5}{9}$	18,
Pruſſia	meile	25409	14,34
Ruſſia	werſte	3500	104,12
Saxony	meile	29700	12,27
Scotland	mile	5952	61,23
Sileſia	meile	21250	17,15
Spain	legua of Caſtille	21958	16,60
	legua juridica	13724	26,55
	legua maritima	18221	20,
	milla maritima	$6073\frac{2}{3}$	60,
Sweden	mile	35050	10,40
Switzerland	meile	27450	13,28
Turkey	berri	5476	66,55

The following example will ſhew in what manner the proportion between the itinerary meaſures of any two given countries may be aſcertained.

Reduce 1 myriametre new French meaſure into miles of England.

The length of the myriametre being 32797 Engliſh feet, and that of the mile 5280, I ſtate the following equation:

1 myriametre = x
1 myriametre = 32797 feet
5280 feet = 1 mile

Reſult 6,21 miles.

OF

LOGARITHMS.

INSTRUCTIONS ON THE USE OF THE TABLE OF LOGARITHMS.

IN the calculations connected with the ſolution of arbitrations of exchange, of operations in regard to bullion and ſpecie, as well as in thoſe of merchandize, we find, in general, certain fractionable numbers which involve either multiplications or diviſions, or both, of a greater or leſs degree of difficulty. In order, therefore, to ſimplify ſuch calculations, which, it may be obſerved, do not require any other reſults than thoſe of approximation, it has been judged expedient to determine their ſolution by the application of logarithms, whoſe eſſential property is that of ſuperſeding the uſe of multiplications, and of diviſions, by the ſimple addition or the ſimple ſubſtraction of the logarithms correſponding with the natural numbers by which it would have been otherwiſe requiſite to have multiplied or to have divided. The uſe of this property is evident, and muſt ſtrike ſtill more forcibly, if it be conſidered, that, in certain propoſitions, in which the dividend and the diviſor conſiſt of ſeveral numbers, we may proceed from the reſpective additions of the logarithms of the invariable numbers in each column, to the ſubſtraction of the leſſer ſum from the greater, and obtain, by this means, fixed logarithms, which will enable us, in general, to reduce whole pages of figures to a ſingle addition and a ſingle ſubſtraction, and thus to bring the calculations in queſtion to the greateſt degree of ſimplicity.

The uſe of logarithms has been but little adopted till of late years in commercial affairs, whether it be that any prejudice may have obtained that they could only be of ſervice in the higher branches of learning, or that not any table had been compoſed excluſively adapted to the uſe of accompting houſes. The ſuperiority, however, of calculations by logarithms to thoſe by common arithmetic, is inconteſtable, ſince, by means of the former, not any greater difficulty occurs, in multiplications and diviſions by fractional numbers, than if the operations themſelves related to whole numbers: it is alſo more eaſy to verify the calculations, ſince it is only requiſite to examine that the logarithms be rightly extracted from the table, and that the addition and ſubſtraction be performed correctly. In a word, the uſe of logarithms is recommendable not only as a powerful means of ſimplification, but as obviating that diſguſt which is almoſt inſeparable from arithmetical calculations.

To make uſe of logarithms, it is not neceſſary to know in what manner they were invented, and I ſhall therefore confine myſelf to ſaying a few words upon the ſubject, which will give an idea of their formation.

OF ARITHMETICAL PROGRESSION.

By arithmetical progreſſion is meant a ſeries of terms, each of which exceeds, or is exceeded by, that which precedes it by the ſame given number.

For inſtance, the ſeries 1 . 3 . 5 . 7 . 9 . 11 is in arithmetical progreſſion, ſince each of the terms exceeds that which precedes it by the ſame number, which is 2.

The ſeries 11 . 9 . 7 . 5 . 3 . 1 is alſo in arithmetical progreſſion, ſince each of the terms is exceeded by that which precedes it, and by the ſame number.

OF GEOMETRICAL PROGRESSION.

Geometrical progreſſion is that in which each term of a ſeries contains the preceding term, or is itſelf contained in it, the ſame number of times throughout.

For inſtance, the ſeries 1 . 3 . 9 . 27 . 81 . 243, &c. is in geometrical progreſſion, ſince each term contains that which precedes it the ſame number of times, which is 3.

The ſeries 243 . 81 . 27 . 9 . 3 . 1 is alſo in geometrical progreſſion, each of the terms being contained by the preceding the ſame number of times.

OF THE FORMATION OF LOGARITHMS.

Logarithms are numbers in arithmetical progreſſion, correſponding, term by term, with a ſimilar ſeries of numbers in geometrical progreſſion. If, for inſtance, we have a geometrical ſeries and an arithmetical ſeries as follows,

1 . 3 . 9 . 27 . 81 . 243
1 . 3 . 5 . 7 . 9 . 11

we ſhall call each term of the lower ſeries the logarithm of the correſponding term in the upper ſeries.

Any given quantity may therefore have an infinite number of different logarithms, ſince the ſame geometrical progreſſion may be made to correſpond with an infinite diverſity of ſeries in arithmetical progreſſion.

In the formation, however, of tables of logarithms, it has been found convenient to adopt a ten-fold progreſſion as the geometrical progreſſion, and the ſeries of natural numbers as the arithmetical progreſſion. It will be remarked, that, in reſpect to the latter, the ratio, or common meaſure of increaſe, is always unity, while the former has the advantage of being adapted to the mode of notation which is in univerſal uſe. The following, therefore, are the progreſſions choſen :

1 . 10 . 100 . 1000 . 10000 . 100000 . 1000000
0 . 1 . 2 . 3 . 4 . 5 . 6

It follows from the nature and correſpondence of theſe progreſſions, that, as often as the ratio of the former may have been uſed as a factor in the formation of any one of the terms of that progreſſion, ſo often will the ratio of the ſecond progreſſion have been added to form the correſponding term of this identical ſecond progreſſion. For inſtance, in the term 10000, the ratio 10 is 4 times a factor, and in the term 4 the ratio is added 4 times.

If any two terms of the geometrical progreſſion be intermultiplied, and if the correſponding terms of the arithmetical progreſſion be added, the product and the ſum will be two terms which will correſpond with each other in the ſame progreſſions.

Upon this principle it is, that, by the ſimple addition of any two or more terms of the arithmetical progreſſion, we can aſcertain the product of the correſponding terms of the geometrical progreſſion.

For inſtance, by adding the terms 2 and 3 which anſwer to 100 and 1000, I have 5, which anſwers to 100000; whence I conclude that the product of 100 by 1000 is 100000, which in fact it is.

It is always eaſy to aſcertain the logarithm of unity followed by any given number of ciphers; for ſuch logarithm will invariably be expreſſed by as many units as there may be ciphers in the given number. In order to extend this practice to the formation of intermediate logarithms, it may be conceived, that, although any given number, for inſtance 3, may not apparently form any part of the geometrical progreſſion 1 . 10 . 100, yet if we were to inſert a great number of geometrical means, ſuppoſe 1,000,000, between the two firſt terms, we ſhould either find the number 3 itſelf, as one of ſuch means, or a number of very near approximation to it. The intermediate terms between 10 . 100 and between 100 . 1000 might be found in like manner, as well as a correſponding number of intermediate terms, in arithmetical proportion, between 0 and 1, and between 1 and 2, 2 and 3, &c. The whole of the geometrical terms being then arranged upon the ſame line, and the whole of the arithmetical terms upon another line, under the former, it is obvious that the lower ſeries would contain units, or decimal fractions, correſponding with the numbers in the upper ſeries, or, in other words, the logarithmic relation of the two ſeries would be complete and exactly ſimilar to that of the fundamental progreſſions.

It is thus, that, in the tables moſt in uſe, the number of decimal places in the logarithmic quantities is 7, than which, however, many more are uſed by men of ſcience with a view to the attainment of a correſponding degree of preciſion. Nevertheleſs, in certain tables which were made a few years ago for the uſe of accompting houſes, the number of decimal places is reduced to 5, and the rather, as a greater degree of preciſion is not neceſſary in thoſe calculations of buſineſs which do not require more than approximate reſults.

It ſhould be remarked, in reſpect to the tables of logarithms, that the firſt figure to the left of each logarithm is called *the characteriſtic;* ſince it is that figure which denotes the claſs of the geometrical progreſſion which compriſes the number to which the logarithm relates. For inſtance, if the characteriſtic of a number be 2, I know that it relates to the ſecond claſs, or the hundreds, the logarithm of 100 being 2; and, as that of 1000 is 3, every number from 100 to 999 incluſively, cannot have any other logarithm than 2 and a decimal fraction.

Thus, the characteriſtic of a logarithm is a number correſponding to the natural numbers, namely, 1 to 10, 2 to 100, 3 to 1000, 4 to 10000, &c. &c. The characteriſtic of the logarithm of any number under 10 is 0.

It happens by this progreſſive correſpondence, that a number being 10 times, 100 times, or 1000 times greater than another number, has the ſame logarithm as the leſſer number, as far as relates to the decimal fractions of each. The characteriſtic alone is ſuſceptible of variation, as will be ſeen by the logarithms of the following numbers:

Numbers	Logarithms
3	0,47712
30	1,47712
300	2,47712
3000	3,47712

the characteriſtics of which are ſeparated by a comma, being 0, 1, 2, 3.

It is this property by which the extraction of logarithms is facilitated, ſince, if we know the logarithm of the number 30, and are deſirous of finding that of 300, of 3000, or of 3, it is requiſite merely to add to the characteriſtic of 30, or to deduct from it, as many units as there may be more or leſs ciphers in the number whoſe logarithm is ſought.

CONSTRUCTION OF THE TABLE.

The tables publiſhed of late for the uſe of accompting houſes are preceded by the negative logarithms of fractions leſs than unity. I have, nevertheleſs, omitted them as unneceſſary in thoſe calculations, in the courſe of this work, in which I have had recourſe to logarithms.

Commencing the table by the number 1, I have divided each unit, to the number 30 incluſively, into twentieths. Within thoſe numbers are compriſed the general rate of exchange of London upon Holland in current florins, that of London upon France in livres tournois, and that of France upon Spain alſo in livres tournois; and as the florin and the livre tournois are both divided into twenty parts, the diviſions of unity in the table are the ſame as thoſe of unity in thoſe exchanges.

In like manner, as the exchange of London upon Holland in florins banco, and the exchange of London upon Hamburgh in marcs banco, are reſolved into ſhillings Flemiſh, while the fractions ariſing from thoſe exchanges cannot be any other than fractions of grotes or half grotes, I have divided each unit from the number 31 to the number 42 into twenty-fourths; ſince it is upon numbers between thoſe juſt mentioned that the two exchanges referred to generally revolve.

Proceeding from the number 43, the fractions of exchanges are, in fact, not more minute than eighths; however, in order to facilitate either the calculation of the charges or the extraction of the logarithms correſponding with the numbers which denote the price of bullion and ſpecie, I have divided the unit into ſixteenths, and have extended ſuch diviſion to the number 120.

From 121 to 150, the unit is divided into eighths; from 151 to 289 into fourths; from 290 to 299 into halves.

Proceeding from the number 300, the logarithms of whole numbers are continued to 2999.

Each page of the table of logarithms conſiſts of twelve columns, ſix of which are of numbers or of fractions correſponding reſpectively to a column of logarithms.

It will be obſerved, that, from 1 to 299, the natural numbers are inſerted at the head of the page or of the ſeveral ſections; and, below, in columns to the left, are inſerted the intermediate fractions between one number and another. To the right of the ſame fractions are found, upon the ſame line, the logarithms of the numbers at the head of the page or of the ſections incluſively of the fractions.

Proceeding from the number 7, I have left in blank the three firſt figures to the left of the greateſt part of the logarithms, after having written them once. By ſuch omiſſion it is intended to render the progreſſion of the ſame figures more eaſy of apprehenſion, and, conſequently to facilitate the ſearch for the logarithms. Nevertheleſs, in extracting them, it is eſſential to connect the three figures upon the left with the three figures upon the right. For inſtance, if the exchange of London upon Paris be 24 11, the logarithm of ſuch number is written 139005; but, if the exchange be 24 12, the three figures of the correſponding logarithm are 094.

It remains, therefore, in this caſe, to prefix, in the extraction, the three figures to the left of the preceding logarithm, which will give 139094 as the logarithm of 24.12.

In like manner, ſuppoſing the logarithm 200966 to be the reſult of an operation, and, in order to find the correſponding natural number, I follow in the table the progreſſion of the three figures to the left, and having reached the number 200, I then follow the progreſſion of the three figures to the right, and, pauſing at 966, I connect thoſe figures with the figures to the left at which I began, that is 200 with 966, and I perceive that the logarithm 200966 correſponds with the natural number $102\frac{4}{16}$, or $102\frac{1}{4}$.

OF THE MANNER OF USING THE TABLE.

To find the Logarithm of a Number between 1 *and* 30.

The exchange of London upon Amſterdam in current florins is at 12. Required its logarithm.

I look among the numbers which are at the head of the pages or of the ſections, and, in one of the ſections of page 421, I find the number 12. Underneath is a logarithm, which has a cipher to the left inſtead of a fraction: it is the identical logarithm required, expreſſed by the figures 107918.

The exchange of London upon Paris is at 25 13. What is its logarithm?

I diſcover in page 423, at the head of the ſecond column, the number 25, and, as the diviſions of unity are the ſame in the table as in the money of exchange, I deſcend in the column of fractions to 13, where I find upon the ſame line 140909, or the logarithm of 25 13.

To find the Logarithm of a Number between 31 and 42.

The exchange of London upon Hamburgh is at 35 9$\frac{1}{2}$. What is its logarithm?

I ſtop at the number 35, and, as the fraction 9$\frac{1}{2}$ is equivalent to 19 half grotes, or $\frac{19}{24}$, the unit being divided into 24 parts, I deſcend in the column of fractions to 19, and I find to the right 155378 as the logarithm of 35 9$\frac{1}{2}$. If the exchange had not been more than 35 9, I ſhould have ſtopped in the column of fractions at 18, repreſenting 18 half grotes or 9 grotes. It is therefore neceſſary, in ſeeking the logarithm of the exchanges of London upon Hamburgh and upon Amſterdam, to double the number of grotes.

The exchange of London upon Spain is at 34$\frac{5}{8}$. What is its logarithm?

I deſcend in the column of fractions below the number 34. Stopping at 15, which repreſents the fraction $\frac{15}{24}$, equivalent to $\frac{5}{8}$, I find upon the ſame line 153939 as the logarithm of 34$\frac{5}{8}$. In the exchange of London upon Spain, the fractions uſed do not exceed eighths. It will therefore be eaſy to find the logarithm of ſuch exchange whenever it may be partly expreſſed by eighths, ſince, according to the preceding example, it will be only requiſite to treble the terms of the fraction, or even its numerator only. In reſpect to other fractions, it is known that $\frac{1}{4}$ correſponds with $\frac{6}{24}$, $\frac{1}{2}$ with $\frac{12}{24}$, $\frac{3}{4}$ with $\frac{18}{24}$.

To find the Logarithm of a Number between 43 and 120.

The exchange of London upon Liſbon is at 61$\frac{7}{8}$. What is its logarithm?

Under the number 61, I ſtop in the column of fractions at 14, repreſenting the fraction $\frac{14}{16}$, equivalent to $\frac{7}{8}$, and I find 179152 as the logarithm of 61$\frac{7}{8}$. If the fraction annexed to the exchange had been $\frac{3}{4}$, I ſhould have ſtopped at 12, repreſenting $\frac{12}{16}$.

As the extraction of the logarithms of the ſeveral numbers from 121 to 2999 cannot fail of being very eaſy, after the preceding examples, I ſhall not enlarge upon the ſubject.

To find the Number correſponding to a Logarithm.

What is the number correſponding to the logarithm 138021?

I trace the progreſſion of the three figures to the left of the logarithm, which brings me to page 422, and, at the ſection of the 12th column, on the line below, is the very logarithm in queſtion. At the head of the ſection is the number 24, in the margin of the logarithm is a cipher in the fractions-place; therefore 24 is the natural number correſponding to the logarithm 138021.

Required the number correſponding to the logarithm 154819.

Following the progreſſion of the three figures to the left of the logarithm, I diſcover, under the number 35, to the right of 8 in the column of fractions, the logarithm 154819; hence, $35\frac{8}{24}$ is the number correſponding to the logarithm 154819. The fraction $\frac{8}{24}$ is reducible to $\frac{4}{12}$, or 4 grotes, if the number repreſent the exchange of London upon Hamburgh; or it may be reduced to $\frac{1}{3}$, in regard to the exchange of London upon Spain.

Required the number correſponding to the logarithm 179301.

Following the progreſſion of the three firſt figures of the logarithm, I ſtop at page 425, and, in the column under the number 62, I find that the fraction $\frac{1}{16}$ correſponds to 179283, and the following fraction to

179327. The fraction $\frac{1}{16}$ is that which approaches the neareſt, and therefore 62$\frac{1}{16}$ is to be conſidered as the number correſponding to the logarithm 179301.

The preceding examples, and the practical application of logarithms to the ſeveral calculations compriſed in this work, appear to me to render unneceſſary any further explanation as to the method of finding the correſpondence of numbers to logarithms.

OF MULTIPLICATION BY LOGARITHMS.

In order to multiply by logarithms, it is neceſſary to add the logarithm of the multiplicand to the logarithm of the multiplier: the ſum will be the logarithm of the product, ſo that, by referring to ſuch ſum among the logarithms in the table, the product in natural numbers will be found in correſpondence.

EXAMPLE.

The exchange of London upon Hamburgh is 36 2$\frac{1}{2}$, and that of London upon Liſbon is 63$\frac{3}{8}$. What is the product of thoſe numbers?

I look in the table for the number 36, and, in the column of fractions beneath it, I ſtop at 5, which indicates 2$\frac{1}{2}$ grotes, or $\frac{5}{24}$. I find upon the ſame line the logarithm 155881.

I look, in like manner, for the number 63, and deſcending to the fraction $\frac{6}{16}$, equal to $\frac{3}{8}$, I perceive that the correſponding logarithm is 180192.

The logarithm of 36 2$\frac{1}{2}$ is therefore . . 155881
The logarithm of 63$\frac{3}{8}$ is 180192

Their ſum is 336073

Referring to the table for the natural number correſponding to that logarithm, I find that the number which approaches the neareſt to it is 2295.

I ſhould have obtained the ſame product by the arithmetical multiplication of 36 $2\frac{1}{2}$ by 63$\frac{3}{8}$.

OF DIVISION BY LOGARITHMS.

To find the quotient of the diviſion of a number by another number, it is neceſſary to deduct the logarithm of the diviſor from the logarithm of the dividend: the number correſponding to the remaining logarithm, and which is to be found in the table, will be the quotient.

EXAMPLE.

It is required to divide the number 2295 by 35$\frac{3}{4}$.

I look in the table for the number 2295, and I find its logarithm to be 356078.

I look, in like manner, for the number 35$\frac{3}{4}$, and ſtopping, in the column of fractions below 35, at 18, repreſenting the fraction $\frac{18}{24}$, or $\frac{3}{4}$, I have the logarithm 155328.

The logarithm of 2295 is therefore . . 336078
The logarithm of 35$\frac{3}{4}$ is 155328

The remaining logarithm is 180750

Looking in the table for the number correſponding to the logarithm 180750, I find that the number which approaches the neareſt to it is 64$\frac{3}{16}$; wherefore 64$\frac{3}{16}$ is the quotient of 2295 divided by 35$\frac{3}{4}$.

I ſhould have obtained the ſame quotient by the arithmetical diviſion of 2295 by 35$\frac{3}{4}$.

OF MULTIPLICATION AND OF DIVISION BY LOGARITHMS.

Theſe operations, when connected, are performed by adding the logarithms of the multiplicand and of the multiplier, and by deducting from their ſum the logarithm of the diviſor.

EXAMPLE.

It is required to multiply $57\frac{9}{16}$ by $109\frac{5}{8}$, and to divide the product by $52\frac{1}{2}$.

$$\begin{array}{rcll} 57\frac{9}{16} & = & 176014 & \text{multiplicand} \\ 109\frac{5}{8} & + & 203991 & \text{multiplier} \\ \hline & & 380005 & \\ 52\frac{1}{2} & - & 172016 & \text{diviſor} \\ \hline & & 207989 & = 120\frac{3}{16} \text{ quotient.} \\ \hline \end{array}$$

In this example, after having extracted the logarithm of $57\frac{9}{16}$, the multiplication is implicitly effected, by adding the logarithm of $109\frac{5}{8}$; and, having found the ſum to be 380005, or the logarithm correſponding to the product of the multiplication of the two numbers, it only remains to make the diviſion, which is effected by deducting at once the logarithm of $52\frac{1}{2}$, leaving a remainder of 207989, which is found to correſpond in the table to the number $120\frac{3}{16}$.

If I had multiplied $57\frac{9}{16}$ by $109\frac{5}{8}$, and then divided the product by $52\frac{1}{2}$, I ſhould have obtained the identical quotient of $120\frac{3}{16}$. Indeed, by effecting thoſe operations arithmetically, it is impoſſible not to feel how much is accompliſhed, in point of ſimplification, by the application of logarithms.

The numerous examples of multiplication and of diviſion by logarithms, compriſed in the ſeveral parts of this work, enable me to diſpenſe with further detail upon the ſubject. I ſhall therefore confine myſelf to obſerving, that, as the units are not divided, in the beginning of the table, into a great number of fractions, the reſults obtained by the uſe of the natural numbers in relation to the logarithms are not rigorouſly exact; but, as the end of thoſe calculations of commerce, to which the logarithms are applied, is only to aſcertain, by approximate reſults, whether an operation be feaſible, it is ſeldom requiſite to obſerve a greater degree of preciſion.

OF FRACTIONAL NUMBERS WHOSE LOGARITHMS ARE NOT IN THE TABLE.

The table being conſtructed chiefly with reference to arbitrations of exchange, it is expedient to anticipate thoſe caſes, in which, by reaſon of any conſiderable variation, the fractions of the principal units may not correſpond with thoſe in the table.

The general rule to find the logarithm of a whole number, with any fraction whatever annexed to it, is to reduce the fractional number into an improper fraction, and then to deduct the logarithm of the denominator from the logarithm of the new numerator. The remainder will be the logarithm required.

EXAMPLE I.

The exchange of London upon Hamburgh is 30 11. What is its logarithm?

The unit relative to the number 30 is divided, in the table, into 20 parts, and is therefore not adapted to furniſhing the logarithm of $30\frac{11}{12}$. According to the rule above mentioned, I reduce the fractional number $30\frac{11}{12}$ into an improper fraction, being $\frac{371}{12}$: from 256937, or the logarithm of 371, I deduct 107918, the logarithm of 12; the remainder, 149019, is the logarithm of $30\frac{11}{12}$.

EXAMPLE II.

The exchange of Madrid upon Paris is 15 5 5. Required its logarithm.

According to the general rule, the whole ſhould be reduced to a fraction, which gives 3665 deniers, or $\frac{3665}{240}$, and then the logarithm of 240 ſhould be deducted from that of 3665. But, as the limits of the table do not exceed 2999, it is expedient to adopt the method which I have pointed out in page 322 of the firſt volume; that is, to take the logarithm of 15 5, and to add to it $\frac{5}{12}$ of the difference between ſuch logarithm and the logarithm of 15 6; and it need not be ſaid, that the logarithmic quantity of $\frac{5}{12}$ can be eaſily aſcertained by multiplying the difference by 5, and by dividing the product by 12.

Logarithm of 15 5 = 118327
Difference for $\frac{5}{12}$ + 59

Logarithm of 15 5 5 118386

OF WHOLE NUMBERS FOLLOWED BY DECIMAL FRACTIONS.

To find the logarithm of a whole number annexing a decimal fraction, it is neceſſary to ſuppreſs the comma which marks the decimal places; to extract the logarithm of the whole number which is the reſult of the ſuppreſſion; and to deduct from the characteriſtic of ſuch logarithm as many units as there may be decimal places in the original number.

EXAMPLE.

The exchange of Bordeaux upon London is 25 francs 57 cents, or 25,57. Required its logarithm.

After ſuppreſſing the comma, I find the logarithm of 2557 to be 340773, and, as there are two decimal places in the original number, I deduct 2 from the characteriſtic 3; the logarithm of 25,57 is, therefore, 140773.

In fact, by the ſuppreſſion of the comma, I have rendered the number 25,57 an hundred times greater than its original import, and the ſame exceſs is of courſe transferred to the logarithm. But, by afterwards deducting two units from the characteriſtic 3, I have rendered the ſame logarithm an hundred times leſs, whereby the correſponding natural number becomes reduced in the ſame proportion: the implied proceſs, therefore, is no other than that of converting the fractional number 25,57 into the fraction $\frac{2557}{100}$, and deducting the logarithm of the denominator from the logarithm of the new numerator.

This method, ſo very ſimple, may be adapted to the exchanges of Genoa and of Leghorn upon France, whenever they may be quoted in francs, as well as to every other number followed by decimals.

Before I conclude theſe inſtructions, I ſhall obſerve, that, in order not to add too much to the bulk of this volume, and to facilitate, at the ſame time, the extraction of the logarithms, as well as their application to the ſeveral calculations compriſed in this work, I have confined myſelf to the inſertion, in this place, of a table, ſhort and ſimple, yet ſufficient for the ſolution, either rigorouſly or by approximation, of all the calculations to which I have applied the logarithms.

Nevertheleſs, as I have occaſionally employed other logarithms correſponding to fractional numbers, and which are not in this table, in reſpect to the ſolution of ſeveral operations, and particularly of thoſe relating to the calculations of merchandize, I beg leave to ſtate that ſuch numbers and their logarithms belong to a table of much greater extent, which I intend to publiſh, and which will anſwer every purpoſe of utility which can be derived from the uſe of logarithms in commercial calculations.

TABLES

OF

LOGARITHMS.

	1		2		3		4		5		6
F.	Log.	F.	Log.	F.	Log.	F.	Log.	F.	Log.	F.	Log.
Twentieths 0	000000	Twentieths 0	030103	Twentieths 0	047712	Twentieths 0	060206	Twentieths 0	069897	Twentieths 0	077815
1	002119	1	031175	1	048430	1	060746	1	070329	1	078176
2	004139	2	032222	2	049136	2	061278	2	070757	2	078533
3	006070	3	033244	3	049831	3	061805	3	071181	3	078888
4	007918	4	034242	4	050515	4	062325	4	071600	4	079239
5	009691	5	035218	5	051188	5	062839	5	072016	5	079588
6	011394	6	036173	6	051851	6	063347	6	072428	6	079934
7	013033	7	037107	7	052504	7	063849	7	072835	7	080277
8	014613	8	038021	8	053148	8	064345	8	073239	8	080618
9	016137	9	038917	9	053782	9	064836	9	073640	9	080956
10	017609	10	039794	10	054407	10	065321	10	074036	10	081291
11	019033	11	040654	11	055023	11	065801	11	074429	11	081624
12	020412	12	041497	12	055630	12	066276	12	074819	12	081954
13	021748	13	042325	13	056229	13	066745	13	075205	13	082282
14	023045	14	043136	14	056820	14	067210	14	075587	14	082607
15	024304	15	043933	15	057403	15	067669	15	075967	15	082930
16	025527	16	044716	16	057978	16	068124	16	076343	16	083251
17	026717	17	045484	17	058546	17	068574	17	076716	17	083569
18	027875	18	046240	18	059106	18	069020	18	077085	18	083885
19	029003	19	046982	19	059660	19	069461	19	077452	19	084198

	7		8		9		10		11		12
0	084510	0	090309	0	095424	0	100000	0	104139	0	107918
1	819	1	580	1	665	1	217	1	336	1	108099
2	085126	2	849	2	904	2	432	2	532	2	279
3	431	3	091110	3	096142	3	647	3	727	3	458
4	733	4	381	4	379	4	860	4	922	4	636
5	086034	5	645	5	614	5	101072	5	105115	5	814
6	332	6	908	6	848	6	284	6	308	6	991
7	629	7	092169	7	097081	7	494	7	500	7	109167
8	923	8	428	8	313	8	703	8	690	8	342
9	087216	9	686	9	543	9	912	9	881	9	517
10	506	10	942	10	772	10	102119	10	106070	10	691
11	795	11	093197	11	098000	11	325	11	258	11	864
12	088081	12	450	12	227	12	531	12	446	12	110037
13	366	13	702	13	453	13	735	13	633	13	209
14	649	14	952	14	677	14	938	14	819	14	380
15	930	15	094201	15	900	15	103141	15	107004	15	551
16	089209	16	448	16	099123	16	342	16	188	16	721
17	487	17	694	17	344	17	543	17	372	17	890
18	763	18	939	18	564	18	743	18	555	18	111059
19	090037	19	095182	19	782	19	941	19	737	19	227

	13		14		15		16		17		18
F.	Log.	F.	Log.	F.	Log.	F.	Log.	F.	Log.	F.	Log.
Twentieths 0	111394	Twentieths 0	114613	Twentieths 0	117609	Twentieths 0	120412	Twentieths 0	123045	Twentieths 0	125527
1	561	1	768	1	754	1	548	1	172	1	648
2	727	2	922	2	898	2	683	2	300	2	768
3	893	3	115076	3	118041	3	817	3	426	3	888
4	112057	4	229	4	184	4	952	4	553	4	126007
5	222	5	381	5	327	5	121085	5	679	5	126
6	385	6	534	6	469	6	219	6	805	6	245
7	548	7	685	7	611	7	352	7	930	7	364
8	710	8	836	8	752	8	484	8	124055	8	482
9	872	9	987	9	893	9	617	9	180	9	600
10	113033	10	116137	10	119033	10	748	10	304	10	717
11	194	11	286	11	173	11	880	11	428	11	834
12	354	12	435	12	312	12	122011	12	551	12	951
13	513	13	585	13	451	13	141	13	674	13	127068
14	672	14	732	14	590	14	272	14	797	14	184
15	830	15	879	15	728	15	401	15	920	15	300
16	988	16	117026	16	866	16	531	16	125042	16	416
17	114145	17	173	17	120003	17	660	17	164	17	531
18	301	18	319	18	140	18	789	18	285	18	646
19	457	19	464	19	276	19	917	19	406	19	761

	19		20		21		22		23		24
0	127875	0	130103	0	132222	0	134242	0	136173	0	138021
1	990	1	211	1	325	1	341	1	267	1	112
2	128103	2	320	2	428	2	439	2	361	2	202
3	217	3	428	3	531	3	537	3	455	3	292
4	330	4	535	4	634	4	635	4	549	4	382
5	443	5	643	5	736	5	733	5	642	5	471
6	556	6	750	6	838	6	830	6	736	6	561
7	668	7	856	7	940	7	928	7	829	7	650
8	780	8	963	8	133041	8	135025	8	922	8	739
9	892	9	131069	9	143	9	122	9	137014	9	828
10	129003	10	175	10	244	10	218	10	107	10	917
11	115	11	281	11	345	11	315	11	199	11	139005
12	226	12	387	12	445	12	411	12	291	12	094
13	336	13	492	13	546	13	507	13	383	13	182
14	447	14	597	14	646	14	603	14	475	14	270
15	557	15	702	15	746	15	698	15	566	15	358
16	667	16	806	16	846	16	793	16	658	16	445
17	776	17	911	17	945	17	889	17	749	17	533
18	885	18	132015	18	134044	18	984	18	840	18	620
19	994	19	118	19	143	19	136078	19	931	19	707

	25		26		27		28		29		30
F.	Log.	F.	Log.	F.	Log.	F.	Log.	F.	Log.	F.	Log.
Twentieths 0	139794	Twentieths 0	141497	Twentieths 0	143136	Twentieths 0	144716	Twentieths 0	146240	Twentieths 0	147712
1	881	1	581	1	217	1	793	1	315	1	784
2	967	2	664	2	297	2	871	2	389	2	857
3	140054	3	747	3	377	3	948	3	464	3	929
4	140	4	830	4	457	4	145025	4	538	4	148001
5	226	5	913	5	537	5	102	5	613	5	073
6	312	6	996	6	616	6	179	6	687	6	144
7	398	7	142078	7	696	7	255	7	761	7	216
8	483	8	160	8	775	8	332	8	835	8	287
9	569	9	243	9	854	9	408	9	909	9	359
10	654	10	325	10	933	10	484	10	982	10	430
11	739	11	406	11	144012	11	561	11	147056	11	501
12	824	12	488	12	091	12	637	12	129	12	572
13	909	13	570	13	170	13	712	13	202	13	643
14	993	14	651	14	248	14	788	14	276	14	714
15	141078	15	732	15	326	15	864	15	349	15	785
16	162	16	813	16	404	16	939	16	422	16	855
17	246	17	894	17	483	17	146015	17	494	17	926
18	330	18	975	18	560	18	090	18	567	18	996
19	414	19	143056	19	638	19	165	19	640	19	149066

	31		32		33		34		35		36
Twenty-fourths 0	149136	Twenty-fourths 0	150515	Twenty-fourths 0	151851	Twenty-fourths 0	153148	Twenty-fourths 0	154407	Twenty-fourths 0	155630
1	195	1	572	1	906	1	201	1	459	1	681
2	253	2	628	2	961	2	254	2	510	2	731
3	311	3	684	3	152016	3	307	3	562	3	781
4	369	4	741	4	070	4	360	4	613	4	831
5	427	5	797	5	125	5	413	5	665	5	881
6	485	6	853	6	179	6	466	6	716	6	931
7	543	7	909	7	234	7	519	7	767	7	981
8	601	8	965	8	288	8	572	8	819	8	156031
9	658	9	151021	9	342	9	624	9	870	9	080
10	716	10	077	10	396	10	677	10	921	10	130
11	774	11	133	11	451	11	730	11	972	11	180
12	831	12	188	12	504	12	782	12	155023	12	229
13	889	13	244	13	559	13	834	13	074	13	279
14	946	14	300	14	613	14	887	14	125	14	328
15	150003	15	355	15	666	15	939	15	175	15	378
16	060	16	411	16	720	16	991	16	226	16	427
17	117	17	466	17	774	17	154044	17	277	17	477
18	174	18	521	18	827	18	095	18	328	18	526
19	231	19	576	19	881	19	148	19	378	19	575
20	288	20	632	20	935	20	200	20	429	20	624
21	345	21	687	21	988	21	251	21	479	21	673
22	402	22	742	22	153041	22	303	22	530	22	722
23	459	23	797	23	095	23	355	23	580	23	771

Twenty-fourths	37	Twenty-fourths	38	Twenty-fourths	39	Twenty-fourths	40	Twenty-fourths	41	Twenty-fourths	42
F.	Log.	F.	Log.	F.	Log.	F.	Log.	F.	Log.	F.	Log.
0	156820	0	157978	0	159106	0	160206	0	161278	0	162325
1	869	1	158026	1	153	1	251	1	323	1	368
2	918	2	074	2	199	2	297	2	367	2	411
3	967	3	121	3	245	3	342	3	411	3	454
4	157015	4	169	4	292	4	387	4	455	4	497
5	064	5	216	5	338	5	432	5	499	5	540
6	113	6	263	6	384	6	477	6	542	6	583
7	161	7	311	7	430	7	522	7	586	7	626
8	210	8	358	8	476	8	567	8	630	8	668
9	258	9	405	9	522	9	611	9	674	9	711
10	307	10	452	10	568	10	656	10	718	10	754
11	355	11	499	11	614	11	701	11	761	11	796
12	403	12	546	12	660	12	746	12	805	12	839
13	451	13	593	13	706	13	790	13	849	13	882
14	500	14	640	14	751	14	835	14	892	14	924
15	548	15	687	15	797	15	879	15	935	15	966
16	596	16	734	16	843	16	924	16	979	16	163009
17	644	17	781	17	888	17	968	17	162022	17	051
18	692	18	827	18	934	18	161013	18	066	18	094
19	740	19	874	19	979	19	057	19	109	19	136
20	788	20	921	20	160025	20	102	20	152	20	178
21	835	21	967	21	070	21	146	21	195	21	220
22	883	22	159014	22	116	22	190	22	239	22	263
23	931	23	060	23	161	23	234	23	282	23	305

Sixteenths	43	Sixteenths	44	Sixteenths	45	Sixteenths	46	Sixteenths	47	Sixteenths	48
0	163347	0	164345	0	165321	0	166276	0	167210	0	168124
1	410	1	407	1	382	1	335	1	268	1	181
2	473	2	468	2	442	2	394	2	325	2	237
3	536	3	530	3	502	3	452	3	383	3	293
4	599	4	591	4	562	4	511	4	440	4	350
5	661	5	653	5	622	5	570	5	498	5	406
6	724	6	714	6	682	6	628	6	555	6	462
7	786	7	775	7	741	7	687	7	612	7	518
8	849	8	836	8	801	8	745	8	669	8	574
9	911	9	897	9	861	9	804	9	726	9	630
10	974	10	958	10	920	10	862	10	784	10	686
11	164036	11	165019	11	980	11	920	11	840	11	742
12	098	12	079	12	166039	12	978	12	897	12	797
13	160	13	140	13	098	13	167036	13	954	13	853
14	222	14	200	14	158	14	094	14	168011	14	909
15	284	15	261	15	217	15	152	15	068	15	964

	49		50		51		52		53		54
F. Sixteenths	Log.	F. Sixteenths	Log.	F. Sixteenths	Log.	F. Sixteenths	Log.	F. Sixteenths	Log.	F. Sixteenths	Log.
0	169020	0	169897	0	170757	0	171600	0	172428	0	173239
1	075	1	951	1	810	1	653	1	479	1	290
2	130	2	170005	2	863	2	705	2	530	2	340
3	185	3	060	3	916	3	757	3	581	3	390
4	241	4	114	4	969	4	809	4	632	4	440
5	296	5	168	5	171022	5	861	5	683	5	490
6	351	6	222	6	075	6	912	6	734	6	540
7	406	7	275	7	128	7	964	7	785	7	590
8	461	8	329	8	181	8	172016	8	835	8	640
9	515	9	383	9	233	9	068	9	886	9	689
10	570	10	437	10	286	10	119	10	937	10	739
11	625	11	490	11	339	11	171	11	987	11	789
12	679	12	544	12	391	12	222	12	173038	12	838
13	734	13	597	13	443	13	274	13	088	13	888
14	788	14	650	14	496	14	325	14	139	14	937
15	843	15	704	15	548	15	376	15	189	15	987

	55		56		57		58		59		60
0	174036	0	174819	0	175587	0	176343	0	177085	0	177815
1	086	1	867	1	635	1	390	1	131	1	860
2	135	2	916	2	683	2	436	2	177	2	906
3	184	3	964	3	730	3	483	3	223	3	951
4	233	4	175012	4	778	4	530	4	269	4	996
5	282	5	060	5	825	5	576	5	315	5	178041
6	331	6	109	6	872	6	623	6	360	6	086
7	380	7	157	7	920	7	669	7	406	7	131
8	429	8	205	8	967	8	716	8	452	8	176
9	478	9	253	9	176014	9	762	9	497	9	220
10	527	10	301	10	061	10	808	10	543	10	265
11	576	11	349	11	108	11	855	11	588	11	310
12	624	12	397	12	155	12	901	12	634	12	355
13	673	13	444	13	202	13	947	13	679	13	399
14	722	14	492	14	249	14	993	14	725	14	444
15	770	15	540	15	296	15	177039	15	770	15	488

	61		62		63		64		65		66
0	178533	0	179239	0	179934	0	180618	0	181291	0	181954
1	577	1	283	1	977	1	660	1	333	1	996
2	622	2	327	2	180020	2	703	2	375	2	182037
3	666	3	370	3	063	3	745	3	416	3	078
4	711	4	414	4	106	4	787	4	458	4	119
5	755	5	458	5	149	5	830	5	500	5	160
6	799	6	501	6	192	6	872	6	541	6	200
7	843	7	545	7	235	7	914	7	583	7	241
8	838	8	588	8	277	8	956	8	624	8	282
9	932	9	631	9	320	9	998	9	666	9	323
10	976	10	675	10	363	10	181040	10	707	10	364
11	179020	11	718	11	405	11	082	11	748	11	404
12	064	12	761	12	448	12	124	12	790	12	445
13	108	13	805	13	491	13	166	13	831	13	486
14	152	14	848	14	533	14	208	14	872	14	526
15	195	15	891	15	576	15	250	15	913	15	567

	67		68		69		70		71		72
F.	Log.	F.	Log.	F.	Log.	F.	Log.	F.	Log.	F.	Log.
Sixteenths 0	182607	Sixteenths 0	183251	Sixteenths 0	183885	Sixteenths 0	184510	Sixteenths 0	185126	Sixteenths 0	185733
1	648	1	291	1	924	1	549	1	164	1	771
2	688	2	331	2	964	2	587	2	202	2	809
3	729	3	370	3	184003	3	626	3	240	3	846
4	769	4	410	4	042	4	665	4	278	4	884
5	810	5	450	5	081	5	703	5	317	5	921
6	850	6	490	6	120	6	742	6	355	6	959
7	890	7	529	7	159	7	780	7	393	7	996
8	930	8	569	8	198	8	819	8	431	8	186034
9	971	9	609	9	238	9	857	9	469	9	071
10	183011	10	648	10	277	10	896	10	506	10	109
11	051	11	688	11	315	11	934	11	544	11	146
12	091	12	727	12	354	12	973	12	582	12	183
13	131	13	767	13	393	13	185011	13	620	13	221
14	171	14	806	14	432	14	049	14	658	14	258
15	211	15	846	15	471	15	088	15	696	15	295

	73		74		75		76		77		78
0	186332	0	186923	0	187506	0	188081	0	188649	0	189209
1	369	1	960	1	542	1	117	1	684	1	244
2	407	2	996	2	578	2	153	2	720	2	279
3	444	3	187033	3	615	3	188	3	755	3	314
4	481	4	070	4	651	4	224	4	790	4	348
5	518	5	106	5	687	5	260	5	825	5	383
6	555	6	143	6	723	6	295	6	860	6	418
7	592	7	179	7	759	7	331	7	895	7	452
8	629	8	216	8	795	8	366	8	930	8	487
9	666	9	252	9	831	9	402	9	965	9	522
10	703	10	288	10	867	10	437	10	189000	10	556
11	739	11	325	11	902	11	472	11	035	11	591
12	776	12	361	12	938	12	508	12	070	12	625
13	813	13	397	13	974	13	543	13	105	13	660
14	850	14	434	14	188010	14	579	14	140	14	694
15	886	15	470	15	046	15	614	15	175	15	728

	79		80		81		82		83		84
0	189763	0	190309	0	190849	0	191381	0	191908	0	192428
1	797	1	343	1	882	1	414	1	941	1	460
2	831	2	377	2	915	2	448	2	973	2	493
3	866	3	411	3	949	3	481	3	192006	3	525
4	900	4	445	4	982	4	514	4	038	4	557
5	934	5	478	5	191016	5	547	5	071	5	589
6	968	6	512	6	049	6	580	6	104	6	621
7	190003	7	546	7	082	7	612	7	136	7	654
8	037	8	580	8	116	8	645	8	169	8	686
9	071	9	613	9	149	9	678	9	201	9	718
10	105	10	647	10	182	10	711	10	234	10	750
11	139	11	681	11	216	11	744	11	266	11	782
12	173	12	714	12	249	12	777	12	298	12	814
13	207	13	748	13	282	13	810	13	331	13	846
14	241	14	781	14	315	14	842	14	363	14	878
15	275	15	815	15	348	15	875	15	396	15	910

	85		86		87		88		89		90
F.	Log.	F.	Log.	F.	Log.	F.	Log.	F.	Log.	F.	Log.
0	192942	0	193450	0	193952	0	194448	0	194939	0	195424
1	974	1	481	1	983	1	479	1	969	1	454
2	193006	2	513	2	194014	2	510	2	195000	2	485
3	038	3	544	3	045	3	541	3	030	3	515
4	069	4	576	4	077	4	571	4	061	4	545
5	101	5	607	5	108	5	602	5	091	5	575
6	133	6	639	6	139	6	633	6	122	6	605
7	165	7	670	7	170	7	664	7	152	7	635
8	197	8	702	8	201	8	694	8	182	8	665
9	228	9	733	9	232	9	725	9	213	9	695
10	260	10	764	10	263	10	756	10	243	10	725
11	292	11	796	11	294	11	786	11	273	11	755
12	323	12	827	12	325	12	817	12	303	12	785
13	355	13	858	13	356	13	847	13	334	13	815
14	387	14	889	14	387	14	878	14	364	14	844
15	418	15	921	15	417	15	908	15	394	15	874

	91		92		93		94		95		96
0	195904	0	196379	0	196848	0	197313	0	197772	0	198227
1	934	1	408	1	877	1	342	1	801	1	255
2	964	2	438	2	907	2	371	2	829	2	284
3	994	3	467	3	936	3	399	3	858	3	312
4	196023	4	497	4	965	4	428	4	887	4	340
5	053	5	526	5	994	5	457	5	915	5	368
6	083	6	555	6	197023	6	486	6	943	6	396
7	112	7	585	7	052	7	514	7	972	7	425
8	142	8	614	8	081	8	543	8	198000	8	453
9	172	9	644	9	110	9	572	9	029	9	481
10	201	10	673	10	139	10	601	10	057	10	509
11	231	11	702	11	168	11	629	11	086	11	537
12	261	12	731	12	197	12	658	12	114	12	565
13	290	13	761	13	226	13	687	13	142	13	593
14	320	14	790	14	255	14	715	14	171	14	621
15	349	15	819	15	284	15	744	15	199	15	649

	97		98		99		100		101		102
0	198677	0	199123	0	199564	0	200000	0	200432	0	200860
1	705	1	150	1	591	1	027	1	459	1	887
2	733	2	178	2	618	2	054	2	486	2	913
3	761	3	206	3	646	3	081	3	513	3	940
4	789	4	233	4	673	4	108	4	540	4	966
5	817	5	261	5	700	5	136	5	566	5	993
6	845	6	288	6	728	6	163	6	593	6	201019
7	873	7	316	7	755	7	190	7	620	7	046
8	900	8	344	8	782	8	217	8	647	8	072
9	928	9	371	9	810	9	244	9	673	9	099
10	956	10	399	10	837	10	271	10	700	10	125
11	984	11	426	11	864	11	298	11	727	11	152
12	199012	12	454	12	891	12	325	12	753	12	178
13	039	13	481	13	918	13	351	13	780	13	205
14	067	14	509	14	946	14	378	14	807	14	231
15	095	15	536	15	973	15	405	15	833	15	257

	103		104		105		106		107		108
F.	Log.	F.	Log.	F.	Log.	F.	Log	F.	Log.	F.	Log.
0	201284	0	201703	0	202119	0	202531	0	202938	0	203342
1	310	1	729	1	145	1	556	1	964	1	368
2	336	2	756	2	171	2	582	2	989	2	393
3	363	3	782	3	196	3	607	3	203014	3	418
4	389	4	808	4	222	4	633	4	040	4	443
5	415	5	834	5	248	5	658	5	065	5	468
6	442	6	860	6	274	6	684	6	090	6	493
7	468	7	886	7	300	7	709	7	116	7	518
8	494	8	912	8	325	8	735	8	141	8	543
9	520	9	938	9	351	9	760	9	166	9	568
10	546	10	964	10	377	10	786	10	191	10	593
11	573	11	989	11	402	11	811	11	217	11	618
12	599	12	202015	12	428	12	837	12	242	12	643
13	625	13	041	13	454	13	862	13	267	13	668
14	651	14	067	14	479	14	888	14	292	14	693
15	677	15	093	15	505	15	913	15	317	15	718
	109		110		111		112		113		114
0	203743	0	204139	0	204532	0	204922	0	205308	0	205690
1	768	1	164	1	557	1	946	1	332	1	714
2	792	2	189	2	581	2	970	2	356	2	738
3	817	3	213	3	606	3	994	3	380	3	762
4	842	4	238	4	630	4	205019	4	404	4	786
5	867	5	262	5	654	5	043	5	428	5	809
6	892	6	287	6	679	6	067	6	452	6	833
7	917	7	312	7	703	7	091	7	476	7	857
8	941	8	336	8	727	8	115	8	500	8	881
9	966	9	361	9	752	9	139	9	523	9	904
10	991	10	385	10	776	10	163	10	547	10	928
11	204016	11	410	11	800	11	188	11	571	11	952
12	040	12	434	12	825	12	212	12	595	12	975
13	065	13	459	13	849	13	236	13	619	13	999
14	090	14	483	14	873	14	260	14	643	14	206023
15	115	15	508	15	898	15	284	15	667	15	046
	115		116		117		118		119		120
0	206070	0	206446	0	206819	0	207188	0	207555	0	207918
1	092	1	469	1	842	1	211	1	578	1	941
2	117	2	493	2	865	2	234	2	600	2	963
3	141	3	516	3	888	3	257	3	623	3	986
4	164	4	539	4	911	4	280	4	646	4	208009
5	188	5	563	5	934	5	303	5	669	5	031
6	211	6	586	6	958	6	326	6	691	6	054
7	235	7	609	7	981	7	349	7	714	7	076
8	258	8	633	8	207004	8	372	8	737	8	099
9	282	9	656	9	027	9	395	9	760	9	121
10	305	10	679	10	050	10	418	10	782	10	144
11	329	11	702	11	073	11	441	11	805	11	166
12	352	12	726	12	096	12	463	12	828	12	189
13	376	13	749	13	119	13	486	13	850	13	211
14	...399	14	772	14	142	14	509	14	873	14	234
15	422	15	795	15	165	15	532	15	896	15	256

	121		122		123		124		125		126
F. Eighths	Log.	F. Eighths	Log.	F. Eighths	Log.	F. Eighths	Log.	F. Eighths	Log.	F. Eighths	Log.
0	208279	0	208636	0	208991	0	209342	0	209691	0	210037
1	323	1	680	1	209035	1	386	1	734	1	080
2	368	2	725	2	079	2	430	2	778	2	123
3	413	3	769	3	123	3	473	3	821	3	166
4	458	4	814	4	167	4	517	4	864	4	209
5	502	5	858	5	211	5	561	5	908	5	252
6	547	6	902	6	255	6	604	6	951	6	295
7	591	7	946	7	298	7	648	7	994	7	338
	127		128		129		130		131		132
0	210380	0	210721	0	211059	0	211394	0	211727	0	212057
1	423	1	763	1	101	1	436	1	769	1	099
2	466	2	806	2	143	2	478	2	810	2	140
3	508	3	848	3	185	3	519	3	851	3	181
4	551	4	890	4	227	4	561	4	893	4	222
5	594	5	933	5	269	5	603	5	934	5	263
6	636	6	975	6	311	6	644	6	975	6	303
7	679	7	211017	7	353	7	685	7	212016	7	344
	133		134		135		136		137		138
0	212385	0	212710	0	213033	0	213354	0	213672	0	213988
1	426	1	751	1	074	1	394	1	712	1	214027
2	467	2	791	2	114	2	434	2	751	2	067
3	507	3	832	3	154	3	473	3	791	3	106
4	548	4	872	4	194	4	513	4	830	4	145
5	589	5	913	5	234	5	553	5	870	5	184
6	629	6	953	6	274	6	593	6	909	6	223
7	670	7	993	7	314	7	632	7	949	7	262
	139		140		141		142		143		144
0	214301	0	214613	0	214922	0	215229	0	215534	0	215836
1	341	1	652	1	960	1	267	1	572	1	874
2	380	2	690	2	999	2	305	2	609	2	912
3	418	3	729	3	215037	3	343	3	647	3	919
4	457	4	768	4	076	4	381	4	685	4	987
5	496	5	806	5	114	5	420	5	723	5	216024
6	535	6	845	6	152	6	458	6	761	6	062
7	574	7	883	7	191	7	496	7	799	7	099
	145		146		147		148		149		150
0	216137	0	216435	0	216732	0	217026	0	217319	0	217609
1	174	1	472	1	769	1	063	1	355	1	645
2	212	2	510	2	806	2	099	2	391	2	681
3	249	3	547	3	842	3	136	3	428	3	718
5	286	4	584	4	879	4	173	4	464	4	754
4	324	5	621	5	916	5	209	5	500	5	790
6	361	6	658	6	953	6	246	6	537	6	826
7	398	7	695	7	989	7	282	7	573	7	862

Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.
151	217898	163	221219	175	224304	187	227184	199	229885	211	232428
¼	970	¼	285	¼	366	¼	242	¼	940	¼	480
½	218041	½	352	½	428	½	300	½	994	½	531
¾	113	¾	418	¾	490	¾	358	¾	230049	¾	582
152	184	164	484	176	551	188	416	200	103	212	634
¼	256	¼	551	¼	613	¼	474	¼	157	¼	685
½	327	½	617	½	674	½	531	½	211	½	736
¾	398	¼	683	¾	736	¾	589	¾	266	¾	787
153	469	165	748	177	797	189	646	201	320	213	838
¼	540	¼	814	¼	859	¼	704	¼	374	¼	889
½	611	½	880	½	920	½	761	½	428	½	940
¾	682	¾	945	¾	981	¾	818	¾	481	¾	991
154	752	166	222011	178	225042	190	875	202	535	214	233041
¼	823	¼	076	¼	103	¼	932	¼	589	¼	092
½	893	½	141	½	164	½	990	½	643	½	143
¾	963	¾	207	¾	225	¾	228046	¾	696	¾	193
155	219033	167	272	179	285	191	103	203	750	215	244
¼	103	¼	337	¼	346	¼	160	¼	803	¼	294
½	173	½	401	½	406	½	217	½	856	½	345
¾	243	¾	466	¾	467	¾	274	¾	910	¾	395
156	312	168	531	180	527	192	330	204	963	216	445
¼	382	¼	596	¼	588	¼	387	¼	231016	¼	496
½	451	½	660	½	648	½	443	½	069	½	546
¾	521	¾	724	¾	708	¾	499	¾	122	¾	596
157	590	169	789	181	768	193	556	205	175	217	646
¼	659	¼	853	¼	828	¼	612	¼	228	¼	696
½	728	½	917	½	888	½	665	½	281	½	746
¾	797	¾	981	¾	947	¾	724	¾	334	¾	796
158	866	170	223045	182	226007	194	780	206	387	218	846
¼	934	¼	109	¼	067	¼	836	¼	439	¼	895
½	220003	½	172	½	126	½	892	½	492	½	945
¾	071	¾	236	¾	186	¾	948	¾	545	¾	995
159	140	171	300	183	245	195	229003	207	597	219	234044
¼	208	¼	363	¼	304	¼	059	¼	649	¼	094
½	276	½	426	½	364	½	115	½	702	½	143
¾	344	¾	490	¾	423	¾	170	¾	754	¾	193
160	412	172	553	184	482	196	226	208	806	220	242
¼	480	¼	616	¼	541	¼	281	¼	859	¼	292
½	548	½	679	½	600	½	336	½	911	½	341
¾	615	¾	742	¾	658	¾	391	¾	963	¾	390
161	683	173	805	185	717	197	447	209	232015	221	439
¼	750	¼	867	¼	776	¼	502	¼	067	¼	488
½	817	½	930	½	834	½	557	½	118	½	537
¾	884	¾	992	¾	893	¾	612	¾	170	¾	586
162	952	174	224055	186	951	198	667	210	222	222	635
¼	221018	¼	117	¼	227010	¼	721	¼	274	¼	684
½	085	½	180	½	068	½	776	½	325	½	733
¾	152	¾	242	¾	126	¾	831	¾	377	¾	782

Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.
223	234830	235	237107	247	239270	259	241330	271	243297	283	245179
¼	879	¼	153	¼	314	¼	372	¼	337	¼	217
½	928	½	199	½	358	½	414	½	377	½	255
¾	976	¾	245	¾	401	¾	456	¾	417	¾	294
224	235025	236	291	248	445	260	497	272	457	284	332
¼	073	¼	337	¼	489	¼	539	¼	497	¼	370
½	122	½	383	½	533	½	581	½	537	½	408
¾	170	¾	429	¾	576	¾	622	¾	576	¾	446
225	218	237	475	249	620	261	664	273	616	285	484
¼	266	¼	521	¼	664	¼	706	¼	656	¼	523
½	315	½	566	½	707	½	747	½	696	½	561
¾	363	¾	612	¾	751	¾	789	¾	735	¾	599
226	411	238	658	250	794	262	830	274	775	286	637
¼	459	¼	703	¼	837	¼	872	¼	815	¼	675
½	507	½	749	½	881	½	913	½	854	½	712
¾	555	¾	794	¾	924	¾	954	¾	894	¾	750
227	603	239	840	251	967	263	996	275	933	287	788
¼	650	¼	885	¼	240011	¼	242037	¼	973	¼	826
½	698	½	931	½	054	½	078	½	244012	½	864
¾	746	¾	976	¾	097	¾	119	¾	052	¾	902
228	793	240	238021	252	140	264	160	276	091	288	939
¼	841	¼	066	¼	183	¼	202	¼	130	¼	977
½	889	½	112	½	226	½	243	½	170	½	246015
¾	936	¾	157	¾	269	¾	284	¾	209	¾	052
229	984	241	202	253	312	265	325	277	248	289	090
¼	236031	¼	247	¼	355	¼	366	¼	287	¼	127
½	078	½	292	½	398	½	406	½	326	½	165
¾	126	¾	337	¾	441	¾	447	¾	365	¾	202
230	173	242	382	254	483	266	488	278	404	290	240
¼	220	¼	426	¼	526	¼	529	¼	444	½	315
½	267	½	471	½	569	½	570	½	483	291	389
¾	314	¾	516	¾	611	¾	610	¾	521	½	464
231	361	243	561	255	654	267	651	279	560	292	538
¼	408	¼	605	¼	697	¼	692	¼	599	½	613
½	455	½	650	½	739	½	732	½	638	293	687
¾	502	¾	694	¾	782	¾	773	¾	677	½	761
232	549	244	739	256	824	268	813	280	716	294	835
¼	596	¼	783	¼	866	¼	854	¼	755	½	909
½	642	½	828	½	909	½	894	½	793	295	982
¾	689	¾	872	¾	951	¾	935	¾	832	½	247056
233	736	245	917	257	993	269	975	281	871	296	129
¼	782	¼	961	¼	241036	¼	243016	¼	909	½	202
½	829	½	239005	½	078	½	056	½	948	297	276
¾	875	¾	049	¾	120	¾	096	¾	986	½	349
234	922	246	094	258	162	270	136	282	245025	298	422
¼	968	¼	138	¼	204	¼	177	¼	063	½	494
½	237014	½	182	½	246	½	217	½	102	299	567
¾	061	¾	226	¾	288	¾	257	¾	140	½	640

300				400				500			
Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.
0	247712	50	254407	0	260206	50	265321	0	269897	50	274036
1	857	51	531	1	314	51	418	1	984	51	115
2	248001	52	654	2	423	52	514	2	270070	52	194
3	144	53	777	3	531	53	610	3	157	53	273
4	287	54	900	4	638	54	706	4	243	54	351
5	430	55	255023	5	746	55	801	5	329	55	429
6	572	56	145	6	853	56	896	6	415	56	507
7	714	57	267	7	959	57	992	7	501	57	586
8	855	58	388	8	261066	58	266087	8	586	58	663
9	996	59	509	9	172	59	181	9	672	59	741
10	249136	60	630	10	278	60	276	10	757	60	819
11	276	61	751	11	384	61	370	11	842	61	896
12	415	62	871	12	490	62	464	12	927	62	974
13	554	63	991	13	595	63	558	13	271012	63	275051
14	693	64	256110	14	700	64	652	14	096	64	128
15	831	65	229	15	805	65	745	15	181	65	205
16	969	66	348	16	909	66	839	16	265	66	282
17	250106	67	467	17	262014	67	932	17	349	67	358
18	243	68	585	18	118	68	267025	18	433	68	435
19	379	69	703	19	221	69	117	19	517	69	511
20	515	70	820	20	325	70	210	20	600	70	587
21	651	71	937	21	428	71	302	21	684	71	664
22	786	72	257054	22	531	72	394	22	767	72	740
23	920	73	171	23	634	73	486	23	850	73	815
24	251055	74	287	24	737	74	578	24	933	74	891
25	188	75	403	25	839	75	669	25	272016	75	967
26	322	76	519	26	941	76	761	26	099	76	276042
27	455	77	634	27	263043	77	852	27	181	77	118
28	587	78	749	28	144	78	943	28	263	78	193
29	720	79	864	29	246	79	268034	29	346	79	268
30	851	80	978	30	347	80	124	30	428	80	343
31	983	81	258092	31	448	81	215	31	509	81	418
32	252114	82	206	32	548	82	305	32	591	82	492
33	244	83	320	33	649	83	395	33	673	83	567
34	375	84	433	34	749	84	485	34	754	84	641
35	504	85	546	35	849	85	574	35	835	85	716
36	634	86	659	36	949	86	664	36	916	86	790
37	763	87	771	37	264048	87	753	37	997	87	864
38	892	88	883	38	147	88	842	38	273078	88	938
39	253020	89	995	39	246	89	931	39	159	89	277012
40	148	90	259106	40	345	90	269020	40	239	90	085
41	275	91	218	41	444	91	108	41	320	91	159
42	403	92	329	42	542	92	197	42	400	92	232
43	529	93	439	43	640	93	285	43	480	93	305
44	656	94	550	44	738	94	373	44	560	94	379
45	782	95	660	45	836	95	461	45	640	95	452
46	908	96	770	46	933	96	548	46	719	96	525
47	254033	97	879	47	265031	97	636	47	799	97	597
48	158	98	988	48	128	98	723	48	878	98	670
49	283	99	260097	49	225	99	810	49	957	99	743

600				700				800			
Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.
0	277815	50	281291	0	284510	50	287506	0	290309	50	292942
1	887	51	358	1	572	51	564	1	363	51	993
2	960	52	425	2	634	52	622	2	417	52	293044
3	278032	53	491	3	696	53	679	3	472	53	095
4	104	54	558	4	757	54	737	4	526	54	146
5	176	55	624	5	819	55	795	5	580	55	197
6	247	56	690	6	880	56	852	6	634	56	247
7	319	57	757	7	942	57	910	7	687	57	298
8	390	58	823	8	285003	58	967	8	741	58	349
9	462	59	889	9	065	59	288024	9	795	59	399
10	533	60	954	10	126	60	081	10	849	60	450
11	604	61	282020	11	187	61	138	11	902	61	500
12	675	62	086	12	248	62	195	12	956	62	551
13	746	63	151	13	309	63	252	13	291009	63	601
14	817	64	217	14	370	64	309	14	062	64	651
15	888	65	282	15	431	65	366	15	116	65	702
16	958	66	347	16	491	66	423	16	169	66	752
17	279029	67	413	17	552	67	480	17	222	67	802
18	099	68	478	18	612	68	536	18	275	68	852
19	169	69	543	19	673	69	593	19	328	69	902
20	239	70	607	20	733	70	649	20	381	70	952
21	309	71	672	21	794	71	705	21	434	71	294002
22	379	72	737	22	854	72	762	22	487	72	052
23	449	73	802	23	914	73	818	23	540	73	101
24	518	74	866	24	974	74	874	24	593	74	151
25	588	75	930	25	286034	75	930	25	645	75	201
26	657	76	995	26	094	76	986	26	698	76	250
27	727	77	283059	27	153	77	289042	27	751	77	300
28	796	78	123	28	213	78	098	28	803	78	349
29	865	79	187	29	273	79	154	29	855	79	399
30	934	80	251	30	332	80	209	30	908	80	448
31	280003	81	315	31	392	81	265	31	960	81	498
32	072	82	378	32	451	82	321	32	292012	82	547
33	140	83	442	33	510	83	376	33	064	83	596
34	209	84	506	34	570	84	432	34	117	84	645
35	277	85	569	35	629	85	487	35	169	85	694
36	346	86	632	36	688	86	542	36	221	86	743
37	414	87	696	37	747	87	597	37	273	87	792
38	482	88	759	38	806	88	653	38	324	88	841
39	550	89	822	39	864	89	708	39	376	89	890
40	618	90	885	40	922	90	763	40	428	90	939
41	686	91	948	41	982	91	818	41	480	91	988
42	754	92	284011	42	287040	92	873	42	531	92	295036
43	821	93	073	43	099	93	927	43	583	93	085
44	889	94	136	44	157	94	982	44	634	94	134
45	956	95	198	45	216	95	290037	45	686	95	182
46	281023	96	261	46	274	96	091	46	737	96	231
47	090	97	323	47	332	97	146	47	788	97	279
48	158	98	386	48	390	98	200	48	840	98	328
49	224	99	448	49	448	99	255	49	891	99	376

900				1000				1100			
Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.
0	295424	50	297772	0	300000	50	302119	0	304139	50	306070
1	472	51	818	1	043	51	160	1	179	51	108
2	521	52	864	2	087	52	202	2	218	52	145
3	569	53	909	3	130	53	243	3	258	53	183
4	617	54	955	4	173	54	284	4	297	54	221
5	665	55	298000	5	217	55	325	5	336	55	258
6	713	56	046	6	260	56	366	6	376	56	296
7	761	57	091	7	303	57	408	7	415	57	333
8	809	58	137	8	346	58	449	8	454	58	371
9	856	59	182	9	389	59	490	9	493	59	408
10	904	60	227	10	432	60	531	10	532	60	446
11	952	61	272	11	475	61	572	11	571	61	483
12	999	62	318	12	518	62	612	12	610	62	521
13	296047	63	363	13	561	63	653	13	650	63	558
14	095	64	408	14	604	64	694	14	689	64	595
15	142	65	453	15	647	65	735	15	727	65	633
16	190	66	498	16	689	66	776	16	766	66	670
17	237	67	543	17	732	67	816	17	805	67	707
18	284	68	588	18	775	68	857	18	844	68	744
19	332	69	632	19	817	69	898	19	883	69	781
20	379	70	677	20	860	70	938	20	922	70	819
21	426	71	722	21	903	71	979	21	961	71	856
22	473	72	767	22	945	72	303019	22	999	72	893
23	520	73	811	23	988	73	060	23	305038	73	930
24	567	74	856	24	301030	74	100	24	077	74	967
25	614	75	900	25	072	75	141	25	115	75	307004
26	661	76	945	26	115	76	181	26	154	76	041
27	708	77	989	27	157	77	222	27	192	77	078
28	755	78	299034	28	199	78	262	28	231	78	115
29	802	79	078	29	242	79	302	29	269	79	151
30	848	80	123	30	284	80	342	30	308	80	188
31	895	81	167	31	326	81	383	31	346	81	225
32	942	82	211	32	368	82	423	32	385	82	262
33	988	83	255	33	410	83	463	33	423	83	298
34	297035	84	300	34	452	84	503	34	461	84	335
35	081	85	344	35	494	85	543	35	500	85	372
36	128	86	388	36	536	86	583	36	538	86	408
37	174	87	432	37	578	87	623	37	576	87	445
38	220	88	476	38	620	88	663	38	614	88	482
39	267	89	520	39	662	89	703	39	652	89	518
40	313	90	564	40	703	90	743	40	690	90	555
41	359	91	607	41	745	91	782	41	729	91	591
42	405	92	651	42	787	92	822	42	767	92	628
43	451	93	695	43	828	93	862	43	805	93	664
44	497	94	739	44	870	94	902	44	843	94	700
45	543	95	782	45	912	95	941	45	881	95	737
46	589	96	826	46	953	96	981	46	918	96	773
47	635	97	870	47	995	97	304021	47	956	97	809
48	681	98	913	48	302036	98	060	48	994	98	846
49	727	99	957	49	078	99	100	49	306032	99	882

1200				1300				1400			
Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.
0	307918	50	309691	0	311394	50	313033	0	314613	50	316137
1	954	51	726	1	428	51	066	1	644	51	167
2	990	52	760	2	461	52	098	2	675	52	197
3	308027	53	795	3	494	53	130	3	706	53	227
4	063	54	830	4	528	54	162	4	737	54	256
5	099	55	864	5	561	55	194	5	768	55	286
6	135	56	899	6	594	56	226	6	799	56	316
7	171	57	934	7	628	57	258	7	829	57	346
8	207	58	968	8	661	58	290	8	860	58	376
9	243	59	310003	9	694	59	322	9	891	59	406
10	279	60	037	10	727	60	354	10	922	60	435
11	314	61	072	11	760	61	386	11	953	61	465
12	350	62	106	12	793	62	418	12	983	62	495
13	386	63	140	13	826	63	450	13	315014	63	524
14	422	64	175	14	860	64	481	14	045	64	554
15	457	65	209	15	893	65	513	15	076	65	584
16	493	66	243	16	926	66	545	16	106	66	613
17	529	67	278	17	959	67	577	17	137	67	643
18	565	68	312	18	992	68	609	18	168	68	673
19	600	69	346	19	312024	69	640	19	198	69	702
20	636	70	380	20	057	70	672	20	229	70	732
21	672	71	415	21	090	71	704	21	259	71	761
22	707	72	449	22	123	72	735	22	290	72	791
23	743	73	483	23	156	73	767	23	320	73	820
24	778	74	517	24	189	74	799	24	351	74	850
25	814	75	551	25	222	75	830	25	381	75	879
26	849	76	585	26	254	76	862	26	412	76	909
27	884	77	619	27	287	77	893	27	442	77	938
28	920	78	653	28	320	78	925	28	473	78	967
29	955	79	687	29	352	79	956	29	503	79	997
30	991	80	721	30	385	80	988	30	534	80	317026
31	309026	81	755	31	418	81	314019	31	564	81	056
32	061	82	789	32	450	82	051	32	594	82	085
33	096	83	823	33	483	83	082	33	625	83	114
34	132	84	856	34	516	84	114	34	655	84	143
35	167	85	890	35	548	85	145	35	685	85	173
36	202	86	924	36	581	86	176	36	715	86	202
37	237	87	958	37	613	87	208	37	746	87	231
38	272	88	992	38	646	88	239	38	776	88	260
39	307	89	311025	39	678	89	270	39	806	89	289
40	342	90	059	40	710	90	301	40	836	90	319
41	377	91	093	41	743	91	333	41	866	91	348
42	412	92	126	42	775	92	364	42	897	92	377
43	447	93	160	43	808	93	395	43	927	93	406
44	482	94	193	44	840	94	426	44	957	94	435
45	517	95	227	45	872	95	457	45	987	95	464
46	552	96	260	46	905	96	489	46	316017	96	493
47	587	97	294	47	937	97	520	47	047	97	522
48	621	98	327	48	969	98	551	48	077	98	551
49	656	99	361	49	313001	99	582	49	107	99	580

1500				1600				1700			
Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.
0	317609	50	319033	0	320412	50	321748	0	323045	50	324304
1	638	51	061	1	439	51	775	1	070	51	329
2	667	52	089	2	466	52	801	2	096	52	353
3	696	53	117	3	493	53	827	3	121	53	378
4	725	54	145	4	520	54	854	4	147	54	403
5	754	55	173	5	547	55	880	5	172	55	428
6	782	56	201	6	575	56	906	6	198	56	452
7	811	57	229	7	602	57	932	7	223	57	477
8	840	58	257	8	629	58	958	8	249	58	502
9	869	59	285	9	656	59	985	9	274	59	527
10	898	60	312	10	683	60	322011	10	300	60	551
11	926	61	340	11	710	61	037	11	325	61	576
12	955	62	368	12	736	62	063	12	350	62	601
13	984	63	396	13	763	63	089	13	376	63	625
14	318013	64	424	14	790	64	115	14	401	64	650
15	041	65	451	15	817	65	141	15	426	65	674
16	070	66	479	16	844	66	167	16	452	66	699
17	099	67	507	17	871	67	194	17	477	67	724
18	127	68	535	18	898	68	220	18	502	68	748
19	156	69	562	19	925	69	246	19	528	69	773
20	184	70	590	20	952	70	272	20	553	70	797
21	213	71	618	21	978	71	298	21	578	71	822
22	241	72	645	22	321005	72	324	22	603	72	846
23	270	73	673	23	032	73	350	23	629	73	871
24	298	74	700	24	059	74	376	24	654	74	895
25	327	75	728	25	085	75	401	25	679	75	920
26	355	76	756	26	112	76	427	26	704	76	944
27	384	77	783	27	139	77	453	27	729	77	969
28	412	78	811	28	165	78	479	28	754	78	993
29	441	79	838	29	192	79	505	29	779	79	325018
30	469	80	866	30	219	80	531	30	805	80	042
31	498	81	893	31	245	81	557	31	830	81	066
32	526	82	921	32	272	82	583	32	855	82	091
33	554	83	948	33	299	83	608	33	880	83	115
34	583	84	976	34	325	84	634	34	905	84	139
35	611	85	320003	35	352	85	660	35	930	85	164
36	639	86	030	36	378	86	686	36	955	86	188
37	667	87	058	37	405	87	712	37	980	87	212
38	696	88	085	38	431	88	737	38	324005	88	237
39	724	89	112	39	458	89	763	39	030	89	261
40	752	90	140	40	484	90	789	40	055	90	285
41	780	91	167	41	511	91	814	41	080	91	310
42	808	92	194	42	537	92	840	42	105	92	334
43	837	93	222	43	564	93	866	43	130	93	358
44	865	94	249	44	590	94	891	44	155	94	382
45	893	95	276	45	617	95	917	45	180	95	406
46	921	96	303	46	643	96	943	46	204	96	431
47	949	97	330	47	669	97	968	47	229	97	455
48	977	98	358	48	696	98	994	48	254	98	479
49	319005	99	385	49	722	99	323019	49	279	99	503

1800				1900				2000			
Nu.	Log.	Nu.	Log.	Nu.	Log	Nu.	Log.	Nu.	Log.	Nu.	Log.
0	325527	50	326717	0	327875	50	329003	0	330103	50	331175
1	551	51	741	1	898	51	026	1	125	51	197
2	575	52	764	2	921	52	048	2	146	52	218
3	600	53	788	3	944	53	070	3	168	53	239
4	624	54	811	4	967	54	092	4	190	54	260
5	648	55	834	5	989	55	115	5	211	55	281
6	672	56	858	6	328012	56	137	6	233	56	302
7	696	57	881	7	035	57	159	7	255	57	323
8	720	58	905	8	058	58	181	8	276	58	345
9	744	59	928	9	081	59	203	9	298	59	366
10	768	60	951	10	103	60	226	10	320	60	387
11	792	61	975	11	126	61	248	11	341	61	408
12	816	62	998	12	149	62	270	12	363	62	429
13	840	63	327021	13	171	63	292	13	384	63	450
14	864	64	045	14	194	64	314	14	406	64	471
15	888	65	068	15	217	65	336	15	428	65	492
16	912	66	091	16	240	66	358	16	449	66	513
17	935	67	114	17	262	67	380	17	471	67	534
18	959	68	138	18	285	68	403	18	492	68	555
19	983	69	161	19	307	69	425	19	514	69	576
20	326007	70	184	20	330	70	447	20	535	70	597
21	031	71	207	21	353	71	469	21	557	71	618
22	055	72	231	22	375	72	491	22	578	72	639
23	079	73	254	23	398	73	513	23	600	73	660
24	102	74	277	24	421	74	535	24	621	74	681
25	126	75	300	25	443	75	557	25	642	75	702
26	150	76	323	26	466	76	579	26	664	76	723
27	174	77	346	27	488	77	601	27	685	77	744
28	198	78	370	28	511	78	623	28	707	78	765
29	221	79	393	29	533	79	645	29	728	79	785
30	245	80	416	30	556	80	667	30	750	80	806
31	269	81	439	31	578	81	688	31	771	81	827
32	293	82	462	32	601	82	710	32	792	82	848
33	316	83	485	33	623	83	732	33	814	83	869
34	340	84	508	34	646	84	754	34	835	84	890
35	364	85	531	35	668	85	776	35	856	85	911
36	387	86	554	36	691	86	798	36	878	86	931
37	411	87	577	37	713	87	820	37	899	87	952
38	435	88	600	38	735	88	842	38	920	88	973
39	458	89	623	39	758	89	863	39	942	89	994
40	482	90	646	40	780	90	885	40	963	90	332015
41	505	91	669	41	803	91	907	41	984	91	035
42	529	92	692	42	825	92	929	42	331006	92	056
43	553	93	715	43	847	93	951	43	027	93	077
44	576	94	738	44	870	94	973	44	048	94	098
45	600	95	761	45	892	95	994	45	069	95	118
46	623	96	784	46	914	96	330016	46	091	96	139
47	647	97	807	47	937	97	038	47	112	97	160
48	670	98	830	48	959	98	060	48	133	98	181
49	694	99	852	49	981	99	081	49	154	99	201

2100				2200				2300			
Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.
0	332222	50	333244	0	334242	50	335218	0	336173	50	337107
1	243	51	264	1	262	51	238	1	192	51	125
2	263	52	284	2	282	52	257	2	211	52	144
3	284	53	304	3	301	53	276	3	229	53	162
4	305	54	325	4	321	54	295	4	248	54	181
5	325	55	345	5	341	55	315	5	267	55	199
6	346	56	365	6	361	56	334	6	286	56	218
7	366	57	385	7	380	57	353	7	305	57	236
8	387	58	405	8	400	58	372	8	324	58	254
9	408	59	425	9	420	59	392	9	342	59	273
10	428	60	445	10	439	60	411	10	361	60	291
11	449	61	465	11	459	61	430	11	380	61	310
12	469	62	486	12	479	62	449	12	399	62	328
13	490	63	506	13	498	63	468	13	418	63	346
14	510	64	526	14	518	64	488	14	436	64	365
15	531	65	546	15	537	65	507	15	455	65	383
16	552	66	566	16	557	66	526	16	474	66	401
17	572	67	586	17	577	67	545	17	493	67	420
18	593	68	606	18	596	68	564	18	511	68	438
19	613	69	626	19	616	69	583	19	530	69	457
20	634	70	646	20	635	70	603	20	549	70	475
21	654	71	666	21	655	71	622	21	568	71	493
22	675	72	686	22	674	72	641	22	586	72	511
23	695	73	706	23	694	73	660	23	605	73	530
24	715	74	726	24	713	74	679	24	624	74	548
25	736	75	746	25	733	75	698	25	642	75	566
26	756	76	766	26	753	76	717	26	661	76	585
27	777	77	786	27	772	77	736	27	680	77	603
28	797	78	806	28	792	78	755	28	698	78	621
29	818	79	826	29	811	79	774	29	717	79	639
30	838	80	846	30	830	80	793	30	736	80	658
31	858	81	866	31	850	81	813	31	754	81	676
32	879	82	885	32	869	82	832	32	773	82	694
33	899	83	905	33	889	83	851	33	791	83	712
34	919	84	925	34	908	84	870	34	810	84	731
35	940	85	945	35	928	85	889	35	829	85	749
36	960	86	965	36	947	86	908	36	847	86	767
37	980	87	985	37	967	87	927	37	866	87	785
38	333001	88	334005	38	986	88	946	38	884	88	803
39	021	89	025	49	335005	89	965	39	903	89	822
40	041	90	044	40	025	90	984	40	922	90	840
41	062	91	064	41	044	91	336003	41	940	91	858
42	082	92	084	42	064	92	021	42	959	92	876
43	102	93	104	43	083	93	040	43	977	93	894
44	122	94	124	44	102	94	059	44	996	94	912
45	143	95	143	45	122	95	078	45	337014	95	931
46	163	96	163	46	141	96	097	46	033	96	949
47	183	97	183	47	160	97	116	47	051	97	967
48	203	98	203	48	180	98	135	48	070	98	985
49	224	99	223	49	199	99	154	49	088	99	338003

2400				2500				2600			
Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.
0	338021	50	338917	0	339794	50	340654	0	341497	50	342325
1	039	51	934	1	811	51	671	1	514	51	341
2	057	52	952	2	829	52	688	2	531	52	357
3	075	53	970	3	846	53	705	3	547	53	374
4	093	54	987	4	863	54	722	4	564	54	390
5	112	55	339005	5	881	55	739	5	581	55	406
6	130	56	023	6	898	56	756	6	597	56	423
7	148	57	041	7	915	57	773	7	614	57	439
8	166	58	058	8	933	58	790	8	631	58	455
9	184	59	076	9	950	59	807	9	647	59	472
10	202	60	094	10	967	60	824	10	664	60	488
11	220	61	111	11	985	61	841	11	681	61	504
12	238	62	129	12	340002	62	858	12	697	62	521
13	256	63	146	13	019	63	875	13	714	63	537
14	274	64	164	14	037	64	892	14	731	64	553
15	292	65	182	15	054	65	909	15	747	65	570
16	310	66	199	16	071	66	926	16	764	66	586
17	328	67	217	17	088	67	943	17	780	67	602
18	346	68	235	18	106	68	960	18	797	68	619
19	364	69	252	19	123	69	976	19	814	69	635
20	382	70	270	20	140	70	993	20	830	70	651
21	399	71	287	21	157	71	341010	21	847	71	667
22	417	72	305	22	175	72	027	22	863	72	684
23	435	73	322	23	192	73	044	23	880	73	700
24	453	74	340	24	209	74	061	24	896	74	716
25	471	75	358	25	226	75	078	25	913	75	732
26	489	76	375	26	243	76	095	26	929	76	749
27	507	77	393	27	261	77	111	27	946	77	765
28	525	78	410	28	278	78	128	28	963	78	781
29	543	79	428	29	295	79	145	29	979	79	797
30	561	80	445	30	312	80	162	30	996	80	813
31	578	81	463	31	329	81	179	31	342012	81	830
32	596	82	480	32	346	82	196	32	029	82	846
33	614	83	498	33	364	83	212	33	045	83	862
34	632	84	515	34	381	84	229	34	062	84	878
35	650	85	533	35	398	85	246	35	078	85	894
36	668	86	550	36	415	86	263	36	095	86	911
37	686	87	568	37	432	87	280	37	111	87	927
38	703	88	585	38	449	88	296	38	127	88	943
39	721	89	602	39	466	89	313	39	144	89	959
40	739	90	620	40	453	90	330	40	160	90	975
41	757	91	637	41	500	91	347	41	177	91	991
42	775	92	655	42	518	92	363	42	193	92	343008
43	792	93	672	43	535	93	380	43	210	93	024
44	810	94	690	44	552	94	397	44	226	94	040
45	828	95	707	45	569	95	414	45	243	95	056
46	846	96	724	46	586	96	480	46	259	96	072
47	863	97	742	47	603	97	447	47	275	97	088
48	881	98	759	48	620	98	464	48	292	98	104
49	899	99	777	49	637	99	481	49	308	99	120

2700				2800				2900			
Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.	Nu.	Log.
0	343136	50	343933	0	344716	50	345484	0	346240	50	346982
1	152	51	949	1	731	51	500	1	255	51	997
2	169	52	965	2	747	52	515	2	270	52	347012
3	185	53	981	3	762	53	530	3	285	53	026
4	201	54	996	4	778	54	545	4	300	54	041
5	217	55	344012	5	793	55	561	5	315	55	056
6	233	56	028	6	809	56	576	6	330	56	070
7	249	57	044	7	824	57	591	7	344	57	085
8	265	58	059	8	840	58	606	8	359	58	100
9	281	59	075	9	855	59	621	9	374	59	114
10	297	60	091	10	871	60	637	10	389	60	129
11	313	61	107	11	886	61	652	11	404	61	144
12	329	62	122	12	902	62	667	12	419	62	159
13	345	63	138	13	917	63	682	13	434	63	173
14	361	64	154	14	932	64	697	14	449	64	188
15	377	65	170	15	948	65	712	15	464	65	202
16	393	66	185	16	963	66	728	16	479	66	217
17	409	67	201	17	979	67	743	17	494	67	232
18	425	68	217	18	994	68	758	18	509	68	246
19	441	69	232	19	345010	69	773	19	523	69	261
20	457	70	248	20	025	70	788	20	538	70	276
21	473	71	264	21	040	71	803	21	553	71	290
22	489	72	279	22	056	72	818	22	568	72	305
23	505	73	295	23	071	73	834	23	583	73	319
24	521	74	311	24	086	74	849	24	598	74	334
25	537	75	326	25	102	75	864	25	613	75	349
26	553	76	342	26	117	76	879	26	627	76	363
27	569	77	358	27	133	77	894	27	642	77	378
28	584	78	373	28	148	78	909	28	657	78	392
29	600	79	389	29	163	79	924	29	672	79	407
30	616	80	404	30	179	80	939	30	687	80	422
31	632	81	420	31	194	81	954	31	702	81	436
32	648	82	436	32	209	82	969	32	716	82	451
33	664	83	451	33	225	83	984	33	731	83	465
34	680	84	467	34	240	84	346000	34	746	84	480
35	696	85	483	35	255	85	015	35	761	85	494
36	712	86	498	36	271	86	030	36	776	86	509
37	727	87	514	37	286	87	045	37	790	87	524
38	743	88	529	38	301	88	060	38	805	88	538
39	759	89	545	39	317	89	075	39	820	89	553
40	775	90	560	40	332	90	090	40	835	90	567
41	791	91	576	41	347	91	105	41	849	91	582
42	807	92	592	42	362	92	120	42	864	92	596
43	823	93	607	43	378	93	135	43	879	93	611
44	838	94	623	44	393	94	150	44	894	94	625
45	854	95	638	45	408	95	165	45	909	95	640
46	870	96	654	46	423	96	180	46	923	96	654
47	886	97	669	47	439	97	195	47	938	97	669
48	902	98	685	48	454	98	210	48	953	98	683
49	917	99	700	49	469	99	225	49	967	99	698

AUXILIARY TABLE;

Intended to facilitate the Deduction of Charges, by ſhewing the Difference between the Logarithms of Numbers under 100, *and the Logarithm of* 100.

At the head of the columns, or of the ſections, are the whole numbers from 0 to 13, and the column to the left denotes the fractions from $\frac{1}{16}$ to $\frac{15}{16}$. The logarithms which will be ſeen upon the ſame line are the logarithms of the whole numbers jointly with thoſe fractions.

The manner of uſing the table is very ſimple. For inſtance, from the logarithm 197715, correſponding to the number 94$\frac{7}{8}$, it is required to deduct 3$\frac{3}{16}$ per cent as the amount of charges: I look for the number 3, at the head of a column, and coming down to $\frac{3}{16}$, in the column of fractions, I find, under the number 3 upon the ſame line as $\frac{3}{16}$, the logarithm 1407, being that which I have to deduct from the logarithm 197715.

In fact, as the amount of the charges is 3$\frac{3}{16}$ per cent, it implies the reduction of 100 to 96$\frac{13}{16}$, and the logarithmic quantity, 1407, is the ſame as the difference between the logarithm of 100 and that of 96$\frac{13}{16}$; as follows:

The logarithm of 100 is	200000
The logarithm of 96$\frac{13}{16}$ is	198593
The difference is	1407

and it is this difference which is pointed out by the auxiliary table.

F.	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	00	436	877	1323	1773	2228	2687	3152	3621	4096	4576	5061	5552	6048
$\frac{1}{16}$	27	464	905	1351	1801	2256	2716	3181	3651	4126	4606	5092	5583	6079
$\frac{1}{8}$	54	491	933	1379	1829	2285	2745	3210	3680	4156	4636	5122	5613	6111
$\frac{3}{16}$	82	519	961	1407	1858	2313	2774	3239	3710	4185	4666	5153	5644	6142
$\frac{1}{4}$	109	546	988	1435	1886	2342	2803	3269	3739	4215	4697	5183	5675	6173
$\frac{5}{16}$	136	574	1016	1463	1914	2371	2832	3298	3769	4245	4727	5214	5706	6204
$\frac{3}{8}$	163	601	1044	1491	1943	2399	2861	3327	3799	4275	4757	5244	5737	6236
$\frac{7}{16}$	190	629	1072	1519	1971	2428	2890	3356	3828	4305	4787	5275	5768	6267
$\frac{1}{2}$	218	656	1100	1547	2000	2457	2919	3386	3858	4335	4818	5306	5799	6298
$\frac{9}{16}$	245	684	1127	1575	2028	2486	2948	3415	3888	4365	4848	5336	5830	6330
$\frac{5}{8}$	272	712	1155	1604	2057	2514	2977	3445	3917	4395	4878	5367	5861	6361
$\frac{11}{16}$	300	739	1183	1632	2085	2543	3006	3474	3947	4425	4909	5398	5892	6393
$\frac{3}{4}$	327	767	1211	1660	2113	2572	3035	3503	3977	4455	4939	5429	5923	6424
$\frac{13}{16}$	354	794	1239	1688	2142	2601	3064	3533	4006	4485	4970	5459	5955	6456
$\frac{7}{8}$	382	822	1267	1716	2171	2629	3093	3562	4036	4515	5000	5490	5986	6487
$\frac{15}{16}$	409	850	1295	1745	2199	2658	3123	3592	4066	4546	5031	5521	6017	6519

TABLE,

Shewing the Equivalence of Vulgar Fractions with Decimal Fractions.

F.	100	F.	100	F.	100	F.	100
$\frac{1}{60}$	$1\frac{2}{3}$	$\frac{4}{15}$	$26\frac{2}{3}$	$\frac{31}{60}$	$51\frac{2}{3}$	$\frac{23}{30}$	$76\frac{2}{3}$
$\frac{1}{48}$	$2\frac{1}{12}$	$\frac{13}{48}$	$27\frac{1}{12}$	$\frac{25}{48}$	$52\frac{1}{12}$	$\frac{37}{48}$	$77\frac{1}{12}$
$\frac{1}{40}$	$2\frac{1}{2}$	$\frac{11}{40}$	$27\frac{1}{2}$	$\frac{21}{40}$	$52\frac{1}{2}$	$\frac{31}{40}$	$77\frac{1}{2}$
$\frac{1}{32}$	$3\frac{1}{8}$	$\frac{9}{32}$	$28\frac{1}{8}$	$\frac{17}{32}$	$53\frac{1}{8}$	$\frac{25}{32}$	$78\frac{1}{8}$
$\frac{1}{30}$	$3\frac{1}{3}$	$\frac{17}{60}$	$28\frac{1}{3}$	$\frac{8}{15}$	$53\frac{1}{3}$	$\frac{47}{60}$	$78\frac{1}{3}$
$\frac{1}{24}$	$4\frac{1}{6}$	$\frac{7}{24}$	$29\frac{1}{6}$	$\frac{13}{24}$	$54\frac{1}{6}$	$\frac{19}{24}$	$79\frac{1}{6}$
$\frac{1}{20}$	5	$\frac{3}{10}$	30	$\frac{11}{20}$	55	$\frac{4}{5}$	80
$\frac{1}{16}$	$6\frac{1}{4}$	$\frac{5}{16}$	$31\frac{1}{4}$	$\frac{9}{16}$	$56\frac{1}{4}$	$\frac{13}{16}$	$81\frac{1}{4}$
$\frac{1}{15}$	$6\frac{2}{3}$	$\frac{19}{60}$	$31\frac{2}{3}$	$\frac{17}{30}$	$56\frac{2}{3}$	$\frac{49}{60}$	$81\frac{2}{3}$
$\frac{3}{40}$	$7\frac{1}{2}$	$\frac{13}{40}$	$32\frac{1}{2}$	$\frac{23}{40}$	$57\frac{1}{2}$	$\frac{33}{40}$	$82\frac{1}{2}$
$\frac{1}{12}$	$8\frac{1}{3}$	$\frac{1}{3}$	$33\frac{1}{3}$	$\frac{7}{12}$	$58\frac{1}{3}$	$\frac{5}{6}$	$83\frac{1}{3}$
$\frac{3}{32}$	$9\frac{3}{8}$	$\frac{11}{32}$	$34\frac{3}{8}$	$\frac{19}{32}$	$59\frac{3}{8}$	$\frac{27}{32}$	$84\frac{3}{8}$
$\frac{1}{10}$	10	$\frac{7}{20}$	35	$\frac{3}{5}$	60	$\frac{17}{20}$	85
$\frac{5}{48}$	$10\frac{5}{12}$	$\frac{17}{48}$	$35\frac{5}{12}$	$\frac{29}{48}$	$60\frac{5}{12}$	$\frac{41}{48}$	$85\frac{5}{12}$
$\frac{7}{60}$	$11\frac{2}{3}$	$\frac{11}{30}$	$36\frac{2}{3}$	$\frac{37}{60}$	$61\frac{2}{3}$	$\frac{13}{15}$	$86\frac{2}{3}$
$\frac{1}{8}$	$12\frac{1}{2}$	$\frac{3}{8}$	$37\frac{1}{2}$	$\frac{5}{8}$	$62\frac{1}{2}$	$\frac{7}{8}$	$87\frac{1}{2}$
$\frac{2}{15}$	$13\frac{1}{3}$	$\frac{23}{60}$	$38\frac{1}{3}$	$\frac{19}{30}$	$63\frac{1}{3}$	$\frac{53}{60}$	$88\frac{1}{3}$
$\frac{7}{48}$	$14\frac{7}{12}$	$\frac{19}{48}$	$39\frac{7}{12}$	$\frac{31}{48}$	$64\frac{7}{12}$	$\frac{43}{48}$	$89\frac{7}{12}$
$\frac{3}{20}$	15	$\frac{2}{5}$	40	$\frac{13}{20}$	65	$\frac{9}{10}$	90
$\frac{5}{32}$	$15\frac{5}{8}$	$\frac{13}{32}$	$40\frac{5}{8}$	$\frac{21}{32}$	$65\frac{5}{8}$	$\frac{29}{32}$	$90\frac{5}{8}$
$\frac{1}{6}$	$16\frac{2}{3}$	$\frac{5}{12}$	$41\frac{2}{3}$	$\frac{2}{3}$	$66\frac{2}{3}$	$\frac{11}{12}$	$91\frac{2}{3}$
$\frac{7}{40}$	$17\frac{1}{2}$	$\frac{17}{40}$	$42\frac{1}{2}$	$\frac{27}{40}$	$67\frac{1}{2}$	$\frac{37}{40}$	$92\frac{1}{2}$
$\frac{11}{60}$	$18\frac{1}{3}$	$\frac{13}{30}$	$43\frac{1}{3}$	$\frac{41}{60}$	$68\frac{1}{3}$	$\frac{14}{15}$	$93\frac{1}{3}$
$\frac{3}{16}$	$18\frac{3}{4}$	$\frac{7}{16}$	$43\frac{3}{4}$	$\frac{11}{16}$	$68\frac{3}{4}$	$\frac{15}{16}$	$93\frac{3}{4}$
$\frac{1}{5}$	20	$\frac{9}{20}$	45	$\frac{7}{10}$	70	$\frac{19}{20}$	95
$\frac{5}{24}$	$20\frac{5}{6}$	$\frac{11}{24}$	$45\frac{5}{6}$	$\frac{17}{24}$	$70\frac{5}{6}$	$\frac{23}{24}$	$95\frac{5}{6}$
$\frac{13}{60}$	$21\frac{2}{3}$	$\frac{7}{15}$	$46\frac{2}{3}$	$\frac{43}{60}$	$71\frac{2}{3}$	$\frac{29}{30}$	$96\frac{2}{3}$
$\frac{7}{32}$	$21\frac{7}{8}$	$\frac{15}{32}$	$46\frac{7}{8}$	$\frac{23}{32}$	$71\frac{7}{8}$	$\frac{31}{32}$	$96\frac{7}{8}$
$\frac{9}{40}$	$22\frac{1}{2}$	$\frac{19}{40}$	$47\frac{1}{2}$	$\frac{29}{40}$	$72\frac{1}{2}$	$\frac{39}{40}$	$97\frac{1}{2}$
$\frac{11}{48}$	$22\frac{11}{12}$	$\frac{23}{48}$	$47\frac{11}{12}$	$\frac{35}{48}$	$72\frac{11}{12}$	$\frac{47}{48}$	$97\frac{11}{12}$
$\frac{7}{30}$	$23\frac{1}{3}$	$\frac{29}{60}$	$48\frac{1}{3}$	$\frac{11}{15}$	$73\frac{1}{3}$	$\frac{59}{60}$	$98\frac{1}{3}$
$\frac{1}{4}$	25	$\frac{1}{2}$	50	$\frac{3}{4}$	75	$\frac{60}{60}$	100

INDEX.

OF OPERATIONS OF SPECIE AND BULLION.

PAGE
Of certain metals 2
Of their ſpecific gravity 4
London, weights and obſervations 6
France, ditto 14
Hamburgh, ditto...................................17
Holland, ditto 20
Portugal, ditto 21
Spain, ditto 22
Of the calculation of gold and ſilver 25
London, proportion of certain weights..............34
London and France, gold in bars 35
ſilver in bars..................38
Spaniſh dollars 41
guineas 44
London and Hamburgh, gold in bars 46
ſilver in bars..........49
Spaniſh dollars........52
London and Holland, gold in bars............55
ſilver in bars...........58
Spaniſh dollars 61
London and Portugal, gold in bars............64
ſilver in bars 66
gold coin 68
Spaniſh dollars.........70
London and Spain, gold in bars.................72
ſilver in bars................74
new doubloons.............76
new dollars.................78

OF PARS OF EXCHANGE AND OF COINS.

PAGE
Of the intrinſic par 83
Of the calculation of the intrinſic par 88
Of the par of coins......................................90
Of the eventual par 93
London and Amsterdam, par of exchange.......95
London and France, ditto..........................96
London and Genoa, ditto 98
London and Hamburgh, ditto......................99
London and Leghorn, ditto 100
London and Naples, ditto 101
London and Portugal, ditto.....................102
London and Rotterdam, ditto...................103
London and Spain, ditto.........................104
London and Venice, ditto........................105

OF PRACTICAL SPECULATIONS IN MERCHANDIZE.

Preliminary obſervations...........................109
Of the calculation of merchandize................111
Firſt operation to import or to export merchandize by the criteria of invoices and accounts of ſale..112
Second operation to import merchandize by the criterion of an invoice..........................122
Third operation to export merchandize by the criterion of an account of ſale..................128
Fourth operation calculated upon the receipt of a price current of merchandize...................135
Of orders in merchandize..........................138
Of arbitrations of merchandize....................141

DESCRIPTION OF MONIES, WEIGHTS, AND MEASURES.

PAGE
Preliminary obſervations........................151
England...160
Achem...163
Acre..164
Aix la Chapelle.................................164
Algiers...165
Aleppo..166
Alexandria......................................167
Alicante..168
Amſterdam.......................................169
Ancona..173
Antwerp...173
Archangel. *See Ruſſia.*
Arragon...175
Augſburgh.......................................176
Barcelona.......................................178
Baſil...180
Batavia...181
Bayonne...182
Beetlefakee.....................................182
Bengal..183
Bergamo...184
Bergen..185
Berlin..185
Bern..187
Bilboa..188
Bologna...189
Bolzano...190
Bombay..190

PAGE
Bordeaux..191
Brazil..192
Bremen 192
Breſlaw 194
Brunſwick 195
Bruſſels. *See Antwerp.*
Buſſorah 196
Cadiz 197
Cairo 198
Calicut..199
Canary Iſlands..199
Canea 200
Canton 200
Carara 202
Caſſel..202
Cette. *See Montpellier.*
China. *See Canton.*
Cleves 203
Coblentz 203
Cologne..204
Conſtantinople. *See Turkey.*
Copenhagen 205
Corfu 207
Coromandel 208
Corſica 209
Corunna. *See Galicia.*
Cracow. *See Poland.*
Cremona. *See Milan.*
Curaçoa..209
Cyprus..210
Damaſcus..210
Dantzic..211

PAGE
Denia. *See Valencia.*
Denmark. *See Copenhagen.*
Dublin..212
Dunkirk.......................................213
Elſinore......................................213
Embden..214
Erfurt..216
Ferrol. *See Galicia.*
Flanders. *See Antwerp.*
Florence......................................216
France..218
Francfort on the Maine........................226
Francfort on the Oder. *See Berlin.*
Galicia.......................................227
Gallipoli.....................................228
Geneva..228
Genoa...230
Gijon. *See Oviedo.*
Goa...233
Gombroon......................................234
Gottenburgh. *See Sweden.*
Guinea..234
Hamburgh......................................235
Hanover.......................................238
Heidelberg....................................239
Hildeſheim....................................240
Holland. *See Amſterdam.*
Hungary.......................................241
Jamaica.......................................242
Japan...242
Ireland. *See Dublin.*
Konigſberg....................................244

PAGE
Leghorn 245
Leipſic 247
Liebau 249
Liege 250
Liſle 250
Liſbon. *See Portugal.*
London. *See England.*
Lubec 251
Lucca 252
Lunenburg 253
Lyons 253
Madras 254
Madrid 255
Magdeburg. *See Berlin.*
Majorca 255
Malacca 256
Malaga 256
Malta 257
Manheim. *See Heidelberg.*
Mantua 258
Marſeilles 258
Martinique 259
Memel. *See Konigſberg.*
Meſſina. *See Sicily.*
Mexico 260
Milan 261
Minorca 262
Mocha 263
Modena 264
Montpellier 264
Morea. *See Patras.*
Morocco 264

PAGE
Munich 265
Munſter 266
Nantes 267
Naples 267
Narva 268
Navarre 269
Nice 270
Nuremberg 270
Oporto. *See Portugal.*
Oſnaburg 272
Oviedo 273
Padua. *See Venice.*
Palermo. *See Sicily.*
Paris 274
Parma 276
Patras 276
Pegu 277
Pernau 277
Perſia 278
Peru. *See Mexico.*
Poland 279
Pondicherry 280
Portugal 281
Prague 284
Pruſſia. *See Berlin.*
Ratiſbon 285
Revel 286
Riga 287
Rochelle 289
Rome 289
Roſtock 291
Rotterdam 292

PAGE
Rouen 292
Ruſſia 293
St. Ander. *See Bilboa and St. Sebaſtian.*
St. Croix 296
St. Euſtatia 296
St. Gall 297
St. Malo 297
St. Peterſburg. *See Ruſſia.*
St. Sebaſtian 298
Sardinia 299
Sayd 299
Scotland 299
Seville. *See Cadiz.*
Siam 301
Sicily 301
Smyrna 302
Spain 303
Stettin 308
Stockholm. *See Sweden.*
Stralſund 309
Straſburg 310
Surat 310
Surinam 311
Sweden 312
Toulon 314
Trieſte 315
Tripoli 316
Tunis 316
Turin 317
Turkey 318
Valencia 329
Venice 322

PAGE
Verona 325
Vienna 325
Vigo. *See Galicia.*
Ulm 327
United States of America 328
Wirtemburg 328
Wiſmar 329
Zell 329
Zuric 330

TABLES OF MONIES, WEIGHTS, AND MEASURES.

Table the firſt, monies of account 338
Table the ſecond, gold coins 344
Table the third, ſilver coins 347
Table the fourth, troy-weight 350
Table the fifth, avoirdupois-weight 353
Table the ſixth, corn meaſure 366
Table the ſeventh, liquid meaſure 374
Table the eighth, cloth meaſure 379
Table the ninth, long meaſure 390
Table the tenth, land meaſure 395
Table the eleventh, itinerary meaſure 397

OF LOGARITHMS.

Inſtructions on the uſe of the tables of logarithms 401
Of arithmetical progreſſion 402
Of geometrical progreſſion 403

PAGE
Of the formation of logarithms....................403
Conſtruction of the table..........................407
Of the manner of uſing the tables................409
Of multiplication by logarithms...................412
Of diviſion by logarithms..........................413
Of multiplication and diviſion by logarithms......414
Of fractional numbers whoſe logarithms are not in the tables...................................415
Of whole numbers followed by decimal fractions...416

TABLES OF LOGARITHMS.

Firſt table...421
Auxiliary table......................................442
Table of equivalence...............................443

ERRATA.

Vol. I, page 320, line 1, inſtead of 1240 read 240.

Vol. II, page 101, line 10, read $68\frac{1}{10}$ grains.

162, line 22, inſtead of " it ſhould contain" read " each buſhel ſhould contain."

180, line 13, read $1\frac{2}{3}$ plappert.

192, line 14, read $2\frac{1}{5}$ pintes.

222, line 30, read " which is equivalent to 513,074 fathoms, or 3,078,444 feet of France."

line 33, read " the millionth part."

254, line 22, read 160 vis, 6400 pollams, or 128000 pagodas.

line 25, inſtead of 3 vis, read 8 vis.

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